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ALTH SURVEY NEW HAVEN

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Health Survey of New Haven

CONDUCTED UNDER THE AUSPICES OF THE COMMUNITY CHEST

BY

C.-E. A. WINSLOW

Professor of Public Health, Yale School of Medicine

WITH THE COOPERATION OF

RA V. HISCOCK, LEONARD GREENBURG, S. C. HARVEY, GERTRUDE E. HODGMAN, H. M. MARVIN, R. H. SUTTIE, H. H. WALKER, L. S. HUIZENGA, W. E. C. ALLISON, J. M. FREIHEIT, E. ICAZA, J. MAGNANO AND HELEN B. MATTHEWMAN.

SOCIAL HYGIENE

BY

WILLIAM F. SNOW, GENERAL DIRECTOR, AND STAFF MEMBERS OF THE
AMERICAN SOCIAL HYGIENE ASSOCIATION
NEW YORK CITY

PUBLIC HEALTH NURSING

BY

GERTRUDE E. HODGMAN
Yale School of Nursing, and
KATHERINE TUCKER
Visiting Nurse Society, Philadelphia.

HOSPITALS AND DISPENSARIES

BY

MICHAEL M. DAVIS
NEW YORK CITY
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Letter of Transmittal.

Mr. George Berger,
President, Community Chest of New Haven,

My dear Mr. Berger:

On September 13, 1926, Miss Mary G. Hills, Chairman of the Preliminary Health Survey Committee of the Public Health Committee of the New Haven Community Chest wrote to ask me to conduct a health survey of the city in accordance with the following memorandum which she transmitted with her letter.

MEMORANDUM CONCERNING A PUBLIC HEALTH SURVEY OF NEW HAVEN.

"A meeting of the Health Division of the New Haven Community Chest was held at the Visiting Nurse Association headquarters on Friday, June 18, to discuss the health situation in New Haven as indicated by special health surveys and health demonstrations which have been conducted in New Haven during the past ten years. Following a discussion of health reports, the Chairman of the Division was instructed to appoint a committee to consider the advisability of having made, in the near future, a comprehensive health survey of this city.

"The preliminary health survey committee consisted of Mrs. Buckland, Miss Prudden, Miss McGovern, Miss Hills, Dr. Rice, with Mr. Dawson and Professor Hiscock as ex-officio members. A meeting of this committee was held on Tuesday, June 29, and Miss Hills was appointed chairman.

"The purposes and possible benefits of a health survey were discussed in detail, and it was decided by the members of the committee present to suggest to the Health Division that Professor C.-E. A. Winslow, Chairman of the Department of Public Health of the Yale School of

Medicine, be invited to conduct a comprehensive health survey of the city. It was believed desirable that this survey be undertaken as early in the fall as practicable.

"In making this suggestion, the special survey committee feels that considerable benefit may be derived from a comprehensive health survey of all agencies, voluntary and official, carrying on health work in the city. Ten years ago such a survey was made, and helpful recommendations resulted. During the past ten years considerable progress has been made in health practice throughout the United States, and standards have been established. A public health survey at present should indicate the progress in health work which has been made locally since the previous survey was made, and should point out the strong and weak points of New Haven's health program. It is generally believed that voluntary agencies in New Haven assume a larger responsibility for certain health activities than is the case in many other communities. A survey would indicate whether or not this is the case, and would map out a sound program for the future.

"If such a survey is undertaken, it is recommended by the preliminary survey committee that a fairly large public health survey committee be appointed, which will represent the various health and hospital agencies and civic organizations as well as special groups in New Haven, which should be represented on an advisory committee of this character."

This invitation was promptly accepted because in the deed of gift creating the Anna M. R. Lauder Department of Public Health in the Yale School of Medicine, it was specifically provided that the resources of the department should, so far as possible, be utilized for the furtherance of the general cause of public health in the State of Connecticut. It was a particular pleasure to undertake this task because in 1917 I presented, with the collaboration of Dr. J. C. Greenway and Mr. David Greenberg, to the Civic Federation of New Haven a similar though less extensive survey.

The second invitation offered a rare opportunity to survey the progress made in our community during a period of ten years. It is gratifying to note that out of 45 specific recommendations made in 1917, 32 have now been carried out, while of the remainder 3 have been rendered unnecessary by changes in public health practice, leaving only 10 still requiring action. Advancing standards of health promotion have, however, naturally opened up many new possibilities which were either non-existent ten years ago or seemed too Utopian to be considered at that time.

In accordance with the suggestion of the Preliminary Survey Committee, a Citizens' Advisory Committee was constituted, with the personnel indicated on a previous page. It is most gratifying to note that His Honor, Mayor Tower, consented to serve as Chairman of this Committee.

The Committee has held five meetings, on May 3, 1927, and on February 1, February 17, March 7 and March 21, 1928, and its members, both at these meetings and in individual conference, have offered suggestions and given us counsel which has proved of the greatest value.

In the actual conduct of the survey as a whole, I was privileged in being able to associate with myself Professor I. V. Hiscock and a number of other colleagues in the University (Professors S. C. Harvey, H. M. Marvin, R. H. Suttie). For the study of the hospital and dispensary situation we were fortunate in securing the aid of Mr. Michael M. Davis of New York, probably the leading expert in this field in the United States.

For the study of public health nursing problems the services of Miss Gertrude E. Hodgman of the Yale School of Nursing were generously provided, with Miss Katherine I. Tucker, Director of the Visiting Nurse Society of Philadelphia, as consultant. For an intensive survey of the

social hygiene problem, we are greatly indebted to the American Social Hygiene Association which sent six investigators to New Haven, each for a period of two weeks or more, and has made a contribution of the highest significance to our knowledge of this complex situation. In connection with this study of social hygiene, the cooperation of Assistant Surgeon General, Thomas Parran of the U. S. Public Health Service, is also gratefully acknowledged. For the study of industrial hygiene conditions the services of Leonard Greenberg, Associate Sanitary Engineer, were provided by the United States Public Health Service. Mr. H. H. Walker of the staff of the Department of Public Health at Yale, and graduate students in the department, particularly Lee S. Huizenga and Helen B. Matthewman, have taken an active part in the work, and the entire medical school class of 1927 aided in the preliminary surveys.

It was a particularly happy circumstance that three of the major health problems of the city had recently been exhaustively studied by specialists in the respective fields; the sewage disposal problem by Mr. G. W. Fuller, the tuberculosis program by Dr. H. A. Pattison, of the National Tuberculosis Association, and the question of mosquito control by Dr. John L. Rice and his assistants. We have drawn extensively upon these three reports in formulating our conclusions.

We desire to express our deep appreciation of the hearty cooperation offered to us by Dr. John L. Rice and his staff in the City Health Department, by the members of the board and staff of the Visiting Nurse Association, of the New Haven Medical Society, of the New Haven Dental Society, of the various hospitals and dispensaries and other health agencies of the community. Dr. Rice, especially,

has contributed most generously to the work, particularly by obtaining exhaustive data in regard to the housing situation in New Haven.

In formulating our conclusions we have taken into full account practice in other cities as revealed by the surveys of some 200 communities conducted during recent years by the Committee on Administrative Practice of the American Public Health Association. It would seem very short sighted, however, to establish future standards merely on present average attainments of other communities. Public health is a new field of community service which is constantly revealing new possibilities. Irrespective of the backwardness of other cities, there are certain clearly indicated lines of future progress in which the expenditure of additional funds for health promotion is certain to effect large savings in expense for the care of sickness and to ensure large dividends in the form of increased health and efficiency. Whether the funds for such profitable investments can be found at a given time is a question for appropriating bodies to decide. It is our business to point out the existence of the opportunity.

The city of New Haven, with its admirable Health Department and its almost unique Visiting Nurse Association, with its hospital facilities and medical school, with its unusually cooperative medical profession and its enlightened public, is, we honestly believe, in position to possess, within the next ten years, the most perfect community health machinery in proportion to its size of any city in the United States—if the progress made during the past decade can be continued in the next, along the lines laid down in this report. We say this advisedly, and with a somewhat extensive knowledge of the health situation throughout the country. It is obvious what the reputation of being the

ideal city from a health standpoint would mean to New Haven; and it is this objective which we would set before you as possible of attainment.

Finally, I should like to point out that this survey, one of the most extensive of its kind ever conducted, has not cost the city of New Haven one penny. The services of all the New Haven investigators and of the representatives of the American Social Hygiene Association have been furnished without cost; and certain of the outside investigators have been paid from the budget of the department of Public Health of the Medical School. It is our hope, however, that funds necessary for printing the survey can be found, so that its results may be available, not only in New Haven but elsewhere.

C.-E. A. WINSLOW,

Anna M. R. Lauder Professor of Public Health,
Yale School of Medicine.

Chapter I.

THE CITY OF NEW HAVEN.

With the cooperation of H. H. Walker.

1. **History.** In April, 1638, the good ship Hector entered Quinnipiac Harbor and the first settlers landed in the territory which now constitutes the city of New Haven, the largest city in Connecticut and the fourth in New England.

At first growth was slow. In 1640 the entire settlement consisted of 42 buildings. Gradually, advantage was taken of the fine harbor on Long Island Sound and for a time shipping and its corollary, ship-building, grew increasingly prominent. In 1716 the Collegiate School, which had been chartered in 1701, was moved from Saybrook to New Haven and in 1718 its name was changed to Yale College. In 1784 New Haven was incorporated as a city, embracing a population of approximately 3,000 persons.

The establishment in 1793 of Eli Whitney's gun factory was the first step in a transition which, influenced by the Industrial Revolution, was to make New Haven a manufacturing city rather than a farming center and a shipping port. The Embargo Act of 1807 and the War of 1812 checked marine commerce, and prestige on the sea was never regained. More industries, however, sprang up and facilities for land transportation increased. In 1824 a freight and passenger steamboat service was chartered. In 1838 the railroad to Hartford was opened, followed by the completion in 1849 of the railroad to New York. The fusion in 1872 of six railway lines into the present New

York, New Haven and Hartford Railroad, with establishment of central offices here has proved a powerful stimulus to industry.

The first telephone exchange in America was opened in New Haven in 1878. Fourteen years later, New Haven's first electric street car clattered through the streets.

Parallel with the development of transportation systems, the industrial development of New Haven moved forward apace. Eli Whitney was the first pioneer and his method of manufacturing standardized gun parts was the precursor of the "quantity production" of modern times. The second fundamental industry was clock-making which owes its development in America to three Connecticut Yankees, Eli Terry, Seth Thomas and Chauncey Jerome. The latter established a branch factory in New Haven in 1844 and in the following year moved his entire establishment from Bristol to New Haven where he founded what is operated today as the New Haven Clock Company. At the same time Leverett Candee & Company were beginning the manufacture of rubber goods under the first Goodyear patents. Twenty years later, in the early sixties, the Winchester Arms Company and the Sargent Company laid the foundation of the great munition and hardware industries of the present day.

The growth of population followed rapidly upon this wave of industrial development. The city had but 22,529 inhabitants in 1850, but the population had doubled by 1870 and further increased to 85,981 in 1890, 108,027 in 1900, 133,605 in 1910, and 162,537 in 1920.

2. **Climate and Topography.** New Haven is located almost at the center of the Connecticut coast line on Long Island Sound, 72 miles from New York City and 160 miles from Boston. It occupies an area of 22.4 square miles (of

which 4.5 square miles are water surface) to the north of New Haven Harbor and along its eastern shore. The 17.9 square miles of land surface are divided into 33 wards.

The city is situated on a generally level plain with ranges of hills on the east and west close to the city, and on the north, at a slightly greater distance. The soil is sandy, the underlying rock deposits lying from two feet to one hundred feet below the surface.

The following data as to climatic conditions have been courteously furnished by Mr. L. M. Tarr, Local Forecaster of the United States Weather Bureau.

The average mean temperature of the city for the period of 54 years (1873-1926) covered by Weather Bureau statistics was 49.8°. A comparison of average mean temperatures for the past 10 years with those of Boston and New York shows New Haven's figure, 50.34° to be only 0.15° higher than that of Boston and 1.88° lower than that of New York. The following table shows the comparison between these cities in regard to mean maximum, mean minimum, and mean annual temperatures for the ten years, 1916-25.

AVERAGE ANNUAL TEMPERATURES, 1916-25, IN BOSTON, NEW HAVEN, AND NEW YORK.

	Boston	*New Haven*	*New York*
Mean Maximum.....	57.93	58.44	59.67
Mean Minimum.....	42.46	42.24	44.82
Mean	50.19	50.34	52.22

Since the average mean daily maximum for the ten year period was 58.44, and the average daily mean minimum was 42.24, the average mean daily range of temperature in New Haven was 16.2°, representing the difference between the hottest and coolest portion of the average day.

The mean temperature for the hottest month of the year, averaged over the 54 year period (1873-1926), was 72.0° in

the month of July. The mean temperature for the coolest month was 28.2°, for January. Therefore, the mean seasonal range between the hottest month of the summer and the coolest month of the winter was 43.8°.

Extremes of temperature are rare. The highest temperature ever recorded by the Weather Bureau was 101° on July 22, 1926, the lowest was -14°, on January 30, 1873. There has never, however, been a period of more than three or four consecutive days above 90° or below 0°. The average date of the last killing frost in spring is April 16 and of the first killing frost in the autumn is October 23.

The atmosphere of New Haven is slightly more humid than that of the large cities adjacent to it. This is particularly noticeable in the morning and middle of the day, but is less significant at night. Averages of the yearly mean for the past 10 years showed readings in relative humidity at 8 A. M. of 71.1% for Boston, 74.4% for New Haven, and 72.3% for New York. The 8 P. M. readings were, for Boston 70.0, for New Haven 70.3, and for New York 65.7. These involve yearly averages, but if the data are analyzed separately for summer and winter, the excess of humidity for New Haven over that for Boston and New York is seen to be much greater in the summer than the winter.

In respect to rainfall, we find a similar and even more significant difference. The ten year averages show the annual precipitation to be for Boston, 37.97 inches; for New Haven 44.24; and for New York 39.2. New Haven's average for the longer period, 1873-1926, was 46.08 inches. The higher rainfall of this city is due, undoubtedly, to its peculiar geographical situation—pocketed on Long Island Sound, where winds from the ocean cross Long Island and become impacted against the hills above the city.

Despite its high rainfall and relative humidity, New Haven is surprisingly free from fog—much more so, in fact. than the other two cities. Comparison for the ten year period just passed showed that the average number of days of dense fog annually was 15.6 in Boston, 20.5 in New York, and only 6.9 in New Haven. New Haven averaged 141.8 days per year that were rated as "clear" by the weather bureau. A more valuable figure is obtained from a study of sunshine, where we find from the yearly averages for the period 1916-1926 that the sun shone in New Haven 60.1% of all the hours of possible sunshine.

Wind velocity is low here. Cyclones and tornadoes are never experienced. The maximum wind velocity ever recorded was only 62 miles per hour, from the Southeast, on October 21, 1904. The prevailing wind direction during the spring, autumn, and winter is north and northwest. During July, August and September, however, it is south and southwest. The average velocity for the ten year period was 9.2 miles per hour in New Haven, as against 10.8 in Boston and 16.8 in New York. However, both the Boston and New York Weather Bureaus have a higher location than the station here, so that these figures may not entirely represent the true state of affairs.

Briefly, then, New Haven has a moderate and mildly variable climate, characteristic of the northeastern United States, but rather high in humidity and rainfall and low in fog and wind velocity.

From the studies of Professor Ellsworth Huntington, which indicate that a daily mean temperature of 64° and a daily mean relative humidity of 80 per cent is most favorable to human health, the month of September is practically perfect in New Haven and the month of June nearly so. On the whole, the mean climate is a trifle too cold for ideal

health. On the other hand, as Huntington shows, the temperature most favorable for maximum human activity is distinctly lower than that which is optimum for health. New Haven's mean climate is admirable from this standpoint, particularly in April, May, October and November. Taking into account temperature, humidity and variability as factors stimulating to activity, New Haven ranks 99 on Huntington's scale of 100 points.

3. **The Population of New Haven.** The population of New Haven is estimated at 181,907 for 1926, 185,135 for 1927 and 188,363 for 1928. The city is growing at a rate of over 3,000 persons a year, which is likely to produce a population of nearly 300,000 about 1950.

The age distribution of the population of New Haven, in 1920, as compared with that of the United States as a whole is indicated below.

AGE DISTRIBUTION OF POPULATION. 1920.
PERCENTAGE OF TOTAL.

Age periods.....	Under 5	5–14	15–24	25–44	45–64	65+
New Haven.....	11.0	19.1	16.8	31.7	16.9	4.3
United States.....	10.9	20.8	17.7	29.6	16.1	4.5

New Haven's age distribution does not differ very materially from that of the country as a whole except for a deficiency of 2.5 per cent in the proportion of its population under 25 and a corresponding excess in the population over that age.

The proportion of foreign-born stock in New Haven is, on the other hand, very high as indicated in the table below.

DISTRIBUTION OF POPULATION BY BIRTH, PARENTAGE, AND COLOR. 1920. PERCENTAGE OF TOTAL.

Birth:		*Native*		*Foreign*	
Color:		*White*			*Colored*
Parentage:	*Native*	*Mixed*	*Foreign*		
New Haven	27.3	8.0	33.7	28.1	2.8
United States	55.3	6.6	14.8	13.0	9.9

The proportion of foreign-born whites and of persons of native birth but foreign parentage is twice as high in New Haven as in the whole United States. Roughly speaking, more than half the population of the country is made up of native born whites of native parentage as against slightly over one-quarter for New Haven, while over 60 per cent of the population of New Haven is made up of foreign born whites or native citizens of foreign parentage against less than 30 per cent for the United States. The country as a whole is predominantly native born, New Haven predominantly foreign born or of foreign parentage. The condition is, however, clearly a transient one as indicated by the following figures.

PERCENTAGE INCREASE IN VARIOUS ELEMENTS OF THE POPULATION. 1910-1920.

Total	21.7
Native white of native parentage	17.7
Native white of mixed parentage	32.2
Native white of foreign parentage	38.2
Foreign born white	6.8
Colored	28.4

Evidently the stream of immigration has been checked since 1910, with a consequent increase in the proportion of native born of mixed and foreign parentage. In subsequent generations the descendents of these individuals will, of course, be merged in the group of native born of native parentage.

The proportion of negroes in the population, while small, has been increasing rapidly.

The particular race stocks represented in the foreign born population of New Haven are indicated below.

ORIGINAL COUNTRY OF BIRTH OF FOREIGN BORN POPULATION. 1920. PERCENTAGE OF TOTAL.

Country of Birth	*New Haven*	*United States*
Italy	32.7	11.6
Russia and Lithuania	19.1	11.1
Ireland	15.7	7.5
Poland	6.5	8.2
England, Scotland and Wales	6.2	8.1
Germany	6.0	12.1
Sweden, Norway and Denmark	3.5	8.5
Canada	3.0	8.1
Austria	1.5	4.1
Hungary	0.9	2.9
Greece	0.7	1.3
West Indies	0.6	0.6
France	0.5	1.1
All others	3.1	14.8

Thus, the foreign born population of New Haven is predominantly Italian, Russian and Irish, these three race-stocks including slightly over two-thirds of the total foreign born population. Canadians, Scandinavians and Germans are relatively few in number.

Of the three dominant stocks, the first two, the Italians and Russians, are characterized by relatively low death rates and the Irish by relatively high death rates. Dublin's studies show that mortality figures for Russians and Italians in Pennsylvania and New York, standardized for age, are within 5 per cent of those for native whites, while the rates for Irish show an excess of 86 per cent and those for Germans an excess of 162 per cent. The considerable proportion of Irish stock in New Haven tends, therefore,

to increase the death rate, but the larger proportions of Italian and Russian race stocks tend materially to decrease it.

4. **Social and Industrial New Haven.** The population of New Haven, as of July 1, 1926, is estimated at 181,907, and the density of population is 10,162 per square mile or 16 persons per acre. There are, within the city, sixteen parks and parkways and 24 city squares, plots, triangles, and playgrounds, comprising a total area of well over 1,750 acres. East Rock and West Rock Parks, of 443 and 287 acres respectively, situated at the north end of the city, provide beautiful drives to their crests which are over 360 feet in elevation and are faced by precipitous jagged red stone cliffs, constituting truly unique geological assets to the city. There are in New Haven 206 miles of streets, two-thirds of which are paved. There are more than 200 miles of the best type of sidewalk. The city's tradition for well shaded streets is sustained by 27,000 trees, largely maples and oaks, with a few of the original elms still surviving. There are 15 banks, savings banks, and trust companies, with total resources exceeding $150,000,000. Transportation facilities are admirable. Seven divisions of the New York, New Haven, and Hartford Railroad center here and 70 to 80 passenger trains enter and leave daily. In a normal year, one billion tons of merchandise are carried out of the city by rail and half as much brought in. Many thousand vessels enter and leave the harbor each year. A network of local and interurban trolley and bus lines renders excellent service.

A business census, conducted in 1925, listed 483 manufacturing plants in New Haven, with an annual output worth $110,506,218. Among the industries that do an an-

nual business in excess of $1,000,000 may be listed the following: firearms and sporting goods, hardware, rubber goods, corsets, foundry and machine-shop products, motor vehicle bodies and parts, printing and publishing, confectionery and ice cream, tobacco and clothing. Oyster culture is also an important industry of New Haven and its adjacent suburbs. Altogether, the industries of the city carry over 30,000 skilled operatives on their pay rolls, constituting a vitally important element in its health problem.*

Finally, it must be noted that New Haven is also distinguished as an educational center. Yale University, with its College, Scientific School and Graduate School and its professional schools of Art, Forestry, Law, Medicine, Nursing and Religion bring 5,000 students to the city from all parts of the world. The city has 62 public schools, including 2 high schools, 4 junior high schools and the Boardman Trade School, and 9 parochial schools, in addition to some 30 private schools, and the general standards of its public school system are high. The Free Public Library. established in 1885, offers for the use of the citizens, 175,000 volumes, and the Yale Library gives access to over 1,400,000 volumes, including many rarities. There are 102 churches in the city representing 13 denominations.

5. **Financial Resources and Appropriations.** It has become an axiom that "Public Health is Purchasable." What resources has New Haven for the purchase of public health and how much does it actually buy?

In the U. S. Census Bureau report on Financial Statistics of Cities for the year 1924, there are given data for 21

* Many of these operatives, of course, reside in adjacent towns and do not contribute to the recorded population of the city.

cities of about the size of New Haven (between 140,000 and 270,000 population) and an analysis of these cities yields the data presented below.

PER CAPITA VALUATION AND EXPENDITURES FOR 21 CITIES IN NEW HAVEN'S POPULATION CLASS. 1924.

	Median City	*New Haven*	*Rank of N. H.*
Property liable to general property tax (estimated true value)	$1,867.57	$1,638.03	12
Total Payment for city government	29.16	31.39	8
Payment for police protection	2.75	3.95	4
" " fire "	3.53	3.53	11
" " health "	.68	.68	11
" " sanitation	2.07	1.69	12
" " charities and hospitals	1.07	1.13	9
" " schools	12.01	13.94	8
" " recreation	.98	.98	11

In the group of 21 cities, New Haven ranks twelfth in per capita value of property liable to assessment, its value being $1,638.03, just below the median for the group, $1,867.57. In expenditure for sanitation, it holds the same rank. In expenditure for fire protection, health protection and recreation, it is itself the median city. In total cost of the city government and in expenditure for schools and for charities and hospitals, it ranks slightly above the median, and in expenditure for police protection it ranks fourth, spending $3.95 per capita against $2.75 for the median city.

By comparison with this group of 21 cities, New Haven evidently spends on the whole somewhat more for productive services in proportion to its resources than do other cities of its size. The 21 cities, however, include a number of southern and western communities in which consciousness of social needs is perhaps somewhat less keen than in New England. Comparison with four other New England

cities, of similar environment and ideals, in regard to the type of expenditure in which we are particularly interested is made in the table below.

PER CAPITA VALUATION AND EXPENDITURES FOR CERTAIN PURPOSES. FIVE NEW ENGLAND CITIES. 1924.

	New Haven	*Hartford*	*Springfield*	*Bridgeport*	*Worcester*
Property liable to general property tax (estimated true value)	$1,638.00	$2,371.00	$1,867.00	$2,001.00	$1,518.00
Total payment for city government	31.39	36.93	47.83	30.95	42.67
Payment for health protection	.68	1.19	.96	1.06	1.29
Payment for sanitation	1.69	3.12	4.27	2.20	2.51
Payment for charities and hospitals	1.13	1.59	1.16	1.84	4.37
Payment for recreation	.98	1.66	2.12	.94	.93

By comparison with her sister cities of New England, the showing made by New Haven is much less satisfactory. The city stands fourth out of five in property value and in total governmental expenditure, fifth in expenditure for health protection, for sanitation and for charities, hospitals and correction, and third in expenditure for recreation. The expenditures of New Haven for the protection of the health of the community are relatively smaller than those of the other cities in proportion to the taxable property of the communities in question.

In addition to its governmental budget, New Haven like other cities, makes a contribution of almost equal importance to community social service through the agency of its Community Chest. Beginning with a Chest fund of $453,528 in 1920, the voluntary contributions for social welfare

have mounted steadily (with the exception of a check in 1926) to approximately $620,000 subscribed in 1927, which represents a very generous response to community needs. The allotment of the Chest funds is approximately subdivided as follows, the figures cited being for 1924 for the sake of comparison with the Census classification of governmental expenditures cited above. The total chest budget for 1924 amounted to $516,800 with a total chest contribution (including overhead and emergencies) of $563,239. The total amount of money raised in 1923 (figured on the basis of the 1924 population for which it was expended) amounted to $3.20 per capita. The Chest budget for health amounted to $0.57 per capita, and its budget for charities and hospitals to $1.62 per capita.

For these two major purposes, the total contributions from public and private sources is as follows:

	City	*Chest*	*Total*
For health conservation.....	$.68	$.57	$1.25
For relief of sickness and poverty..	1.13	1.62	2.75

Thus the Chest bears nearly half the burden of community health protection and more than half of the burden for relief of sickness and poverty.

In the fall of 1926, Mr. J. B. Dawson, Secretary of the Community Chest, prepared the following table to show the relative burden for social welfare borne by public and private agencies in the five New England Chest cities. His figures do not correspond exactly with any of those quoted above, since they are for a later year and since his group of municipal appropriations covered is more inclusive than that of the Census. Furthermore, Mr. Dawson compared for all the cities studied the 1926 appropriation with the 1920 populations so that all his figures are unduly high.

This does not, however, materially affect the relative value for various cities, and the table brings out the main relationships very clearly.

PER CAPITA EXPENDITURES FOR COMPARABLE ITEMS OF COMMUNITY WELFARE.

	City	*Chest*	*Total*
Springfield	$8.01	$2.47	$10.48
Worcester	8.01	2.29	10.30
Hartford	6.91	2.93	9.84
Bridgeport	6.77	2.43	9.20
New Haven	4.59	3.78	8.37

New Haven contributes substantially more through its Chest budget than any other city of the group; but its municipal appropriations are so much lower than those of the other cities that its total contributions for social welfare fall below the figures for any of the other four communities. To meet the needs unprovided for by the municipal authorities, the New Haven Chest not only raises a larger per capita sum than the other New England cities, but also devotes a much larger share of the funds which it does raise to public health (33%) than do the other cities (15-29%).

It is somewhat the fashion nowadays to assume that that city is best governed which spends the least money. Surely, however, this is a shortsighted viewpoint. We do not judge an individual or a business corporation most successful merely because of niggardly expenditure. We honor in an individual or a firm the thrift and the foresight which makes possible investment and expansion along lines which will ensure greater profits in the future. Surely this same principle applies to the business of a community. Public health is purchasable; and the city which cannot or will not find funds to purchase so profitable a commodity is to be pitied rather than envied.

6. **Summary.** New Haven is a typical American city of medium size, with a distinguished history—prominent in diversified industries and a center of higher education.

It has a characteristic New England climate, highly favorable to human efficiency but somewhat too cold during the winter months to be ideal from a health standpoint. We should expect the severe winter climate to manifest itself particularly in high incidence of acute infections of the upper respiratory tract, such as pneumonia.

New Haven has a population of normal age distribution, but one which contains a very high proportion of the foreign-born (nearly two-thirds of its people are either foreign born or native born of foreign parentage). The chief race stocks represented are Italian, Russian and Irish. The Irish stock would tend to increase the death rate, particularly from tuberculosis, cancer and heart disease. On the other hand, the Italians and Russians are characterized by a low mortality.

The municipal appropriations for constructive social service in New Haven are unduly low as compared with other New England cities of similar size. The deficiency is in part, but not wholly, compensated by very generous voluntary offerings through the Community Chest; but the need for more generous investment by the city in proved lines of endeavor for the promotion of health and efficiency is clearly indicated.

Chapter II.

HOUSING.

With the cooperation of L. S. Huizenga, M. D., Department of Public Health, Yale School of Medicine, and of J. M. Freiheit, M. D., and J. Magnano, M. D.

1. **Previous Studies.** Housing conditions in New Haven were studied in a somewhat cursory fashion by Mr. Lawrence Veiller of the National Housing Association in 1910 (see Document No. 6 of the New Haven Civic Federation, January 1911) and more thoroughly by Dr. Carol Aronovici in 1912. (See Document No. 12 of the Civic Federation, October 1913).[1] Mr. Veiller emphasizes the prevalence of untidy back yards due to inadequate garbage collection, of outside privy vaults, of cellar dwellings and overcrowding. Dr. Aronovici stresses room congestion (he finds an average of 138 persons per 100 rooms) defective fire escapes and insanitary toilets. Of the toilets examined 43 per cent were reported as "dirty" and 7 per cent as "filthy"; while 33 per cent were recorded as dark and 60 per cent as unventilated or poorly ventilated.

When we made our survey ten years ago nearly 500 typical tenements were inspected. Dark halls were found to be common and, of 280 toilets inspected, 21 per cent were dark. Fire escapes were also reported as inadequate.

2. **Official Control of Housing Conditions.** The construction and maintenance of dwellings in New Haven, and particularly of tenements, is governed by both state and

[1] Document 11 of this same series, An Industrial Survey of a New Haven District and Document No. 14, Living Conditions Among Negroes in the Ninth Ward, New Haven, also bear upon the local housing problem.

local legislation. The state laws on this point are to be found chiefly in Chapters 133 and 134 (Sections 2563-2599) of the Revised Laws of 1918. The local regulations are embodied in the Official Building Code of the City of New Haven (1921)—supplemented, so far as conditions of maintenance are concerned, by certain of the Health Ordinances and Regulations of the Board of Health. In general the requirements of these laws and regulations are excellent, although we shall point out one or two points in which they might advantageously be strengthened.

The enforcement of these laws and regulations involves the work of four different branches of the City Government, the Department of Building Inspection, of Fire Service, of Police and of Health.

The Department of Building Inspection is responsible for the inspection and approval of plans for all new buildings, (whether one family or two family houses or tenements) and for the reconstruction of old buildings. Under the Chief Inspectors are two assistant inspectors who are kept busy visiting the scene of approved new construction to see that the laws are complied with and locating any building operations attempted without permit. The Department also employs a structural engineer, an electrical inspector and assistant, a plumbing inspector and assistant and two clerks.

The Department of Fire Service, through the Fire Marshal and his deputies and the fire patrols, performs an important health service by ensuring, so far as possible, the prevention of fires through the elimination of fire hazards and the ensuring of proper means of egress for the occupants of buildings in case a fire should occur. Inspections of all dwellings and tenement houses, factories, business establishments and public buildings are made by the mem-

bers of the fire platoon on active duty. In the near future the Board of Fire Commissioners plan to establish a Special Fire Prevention Inspection Bureau, consisting of approximately six men who will devote all of their time to fire prevention work. Many conditions are brought to the attention of the Department by complaints on the part of citizens, (involving some 9,000 inspections a year by the Fire Marshal and his assistants). All findings and consequent changes are kept in a card index file for permanent reference. In 1926, 43,001 inspections were made for the prevention of fires; 2,648 orders were issued for the removal of inflammable material, 109 for changes in methods of storing goods and 1,475 corrections and improvements were made in respect to such points as the provision of ladders leading to roof scuttles (for fire escape), the repairing of chimneys and stove and furnace pipes, the removal of wooden ash containers, and the safeguarding of underground tanks of gasoline. During the period 1922-27, 685 fire escapes were erected on old buildings under the pressure of the Department. The Fire Marshal believes that the law in regard to fire escapes is still notably inadequate, particularly in regard to certain types of two family houses and has repeatedly urged changes in this regard. Existing wooden outside fire escapes are in many instances in a dangerous condition.

The Police Department licenses lodging houses (of which there were only 7 in operation in 1926) and keeps them in excellent condition.

The Department of Health, through its force of sanitary inspectors, is responsible for the general maintenance of sanitary conditions in buildings and yards. The five inspectors work by districts and in addition to the investigation of complaints they conduct routine inspections of the

districts under their control. The excellent work which they perform will be discussed more fully in a succeeding chapter.

3. **Plan of Present Study.** In view of the lack of comprehensive information in regard to the actual housing situation in New Haven, it seemed highly desirable to make a somewhat extensive study of the tenement problem; and in carrying out this plan we were very fortunate in securing the active cooperation of the Health Officer, Dr. J. L. Rice and of his corps of inspectors. A survey card containing places for the main data we desired was prepared and printed and between the summer of 1927 and the spring of 1928 the five sanitary inspectors of the Health Department, Messrs. S. J. Benson, T. J. Hannigan, J. J. O'Donnell, E. S. Peterson and S. T. Williams, were able to make a complete survey of all tenements in the city, filling out a card for each. It is upon the data thus obtained, which gave us a remarkably full and complete picture of the housing situation in New Haven, that the following report is based; and we are deeply indebted to these inspectors for the care and thoroughness with which their study was carried out.

4. **Number and Type of Tenements.** According to our local legislation (and in accord with usual custom) a tenement house is defined as any house or building, or portion thereof, which is rented, leased, let, or hired out to be occupied, or is arranged or designed to be occupied, or is occupied, as the home or residence of three or more families living independently of each other and doing their cooking upon the premises, and having a common right in the halls, stairways or yards.

The inspectors find that there are at present 3179 such tenement houses in the city of New Haven, with an aggregate of 8972 floors and housing 49,499 persons or 27 per cent of the total 1927 population of the city. They are chiefly concentrated in the area southwest of the Green (Wards 4, 5, 6 and 7) the area east of the Green (Wards 10, 11, 12, 13 and 14) the area northwest of the Green (Wards 16, 17 and 19) and in the area between the Quinnipiac and Mill Rivers (Wards 25, 26, 27 and 28). Wards 1, 18, and 20 (the central area and the district to the north) are restricted to first class residences. Over 200 of the 800 streets of the city have tenements on them.

Building in New Haven increased rapidly between 1906 and 1912, (in which year over 1300 families were provided for by new construction), then fell off to a very low point in 1918 (less than 200 families provided for), rose more or less steadily to the provision of new accommodations for nearly 1000 families in 1925 and has since fallen again to about 500 new families provided for in 1927. The bulk of the population was in the past housed in one family and two family homes but the tendency toward tenements or apartments, as they may more euphoniously be termed, appears to be an inevitable one.

The superior economy of the tenement is indicated by the following average figures from data courteously furnished to us by the Department of Building Inspection.

AVERAGE COST OF CONSTRUCTION PER FAMILY.

	Average of 1926 and 1927	*New Construction*
Type of Dwelling	*Frame*	*Fire-resisting material*
One family	$6,000	$16,200
Two Family	4,000	5,000
Tenement	2,200	3,200

It is natural therefore that, as indicated below, the bulk of new housing facilities provided should be of the tenement type.

PERMITS FOR NEW CONSTRUCTION IN NEW HAVEN.

Type of Residence	*Buildings*		*Families to be Housed*	
	1926	*1927*	*1926*	*1927*
One family	132	121	132	121
Two family	35	18	70	36
Apartments	99	36	842	340

It is evident that with the passage of the years a larger and larger proportion of the population is likely to be housed in tenements; since, while only slightly more than a quarter of the population is at present living in such houses, three-quarters of the families provided for by the new construction of the past two years will live in apartments (or tenements). It is obviously therefore of great importance that the construction of this type of dwelling should be rigorously safeguarded.

5. **Height of Buildings and External Light and Air.** The 3179 tenements surveyed are grouped according to height as follows:

1 story	12
2 story	675
3 story	2,347
4 story	125
5 story	2
Not stated	17

Obviously the three story tenement is the typical building of this class in New Haven and it will be noted that only 4 per cent of the tenements exceed this height. There is thus, as yet, no serious problem in New Haven in regard to external light and air.

So far as lot overcrowding is concerned, the law here provides that no tenement house shall occupy more than 90 per cent of a corner lot, or more than seventy-five per cent of any other lot less than sixty feet in depth or more than seventy per cent of any other lot sixty feet or more in depth.

6. **Fire Protection.** Tenements over three stories or over 40 feet in height must have the floor over the cellar or basement nearest to grade level of fire proof construction and buildings over four stories or over 55 feet in height must be of fireproof construction throughout. Since so few tenements are over three stories in height it is obvious that this regulation has operated chiefly in preventing the construction of tall non-fireproof buildings which is of course a highly desirable result.

The surveyors actually report 989 tenements of brick or stone and 2162 of wood. It is encouraging to note that of the 1182 families provided for by new tenements in 1926 and 1927, 65 per cent will be housed in fire resistant buildings.

The New Haven law with regard to fire escapes still seems to us, as it did in 1917, a weak feature of our legislation. It requires an outside fire escape of incombustible materials for buildings over 3 stories in height but not for the 3-story tenements which are the common form of construction. It is required however that there shall be more than one way of egress by stairways on the inside or fire escapes on the outside for all tenements. In a considerable number of two family houses (in which a second egress is not required) there are many persons living on the third floor of frame buildings under conditions which the Fire Marshal believes to be highly hazardous.

The usual practice in the typical three story tenements of New Haven is to rely for egress in case of fire upon two inside stairways. In the 3179 tenements inspected only 696 fire escapes were reported. In 554 instances in which the material was noted we find 473 fire escapes of metal and 81 of wood.

7. **Conditions as to Occupancy.** In regard to occupancy the results reported by the inspectors are exceedingly favorable although it must be realized that the data are obtained by questioning the tenants and not by night inspections.

It is first of all of interest to note, as bearing upon the general adequacy of housing accommodations in the city that of a total of 12,640 apartments, 1120 or 9 per cent were vacant at the time of inspection.

The general picture of New Haven's tenement housing facilities are indicated in the following figures.

Number of tenement houses	3,179
Number of floors	8,972
Number of apartments	12,640
Number of rooms	55,612
Number of occupants	49,499

The average tenement house has three floors, four apartments and 17.5 rooms. Most astonishing of all we find that instead of 138 persons per 100 rooms as in 1913, there are now only 89 persons per 100 rooms, an extraordinarily good record. The average size of an individual room is 1416 cubic feet.

Furthermore, the table below shows that not only average but individual conditions are on the whole remarkably satisfactory.

Cubic Contents of Apartment per Person	*Number of Apartments*
Over 1000 cubic feet	11,224
900-1000 cubic feet	125
800-899 cubic feet	85
700-799 cubic feet	33
600-699 cubic feet	21
500-599 cubic feet	19
400-499 cubic feet	2
300-399 cubic feet	4
200-299 cubic feet	2
100-199 cubic feet	1
Not stated	4
	11,520

Thus it appears that in 97 per cent of all occupied apartments there is an air space of over 1000 cubic feet per person which is an excellent figure while only 9 apartments show less than 500 cubic feet per person. The latter are occupied in violation of the law which requires not less than 500 cubic feet of air for each person over 12 years of age and 300 cubic feet for each child under 12 years of age in the sleeping room alone (while our figures are for the whole apartment).

Of the 49,499 persons reported to the investigators only 804 were lodgers which, if the information is correct, again indicates relative freedom from overcrowding.

8. **Lighting of Apartments.** Our law requires that every room (except water closet compartments and bath rooms) shall have at least one window opening upon a street or upon a yard or court with an area equal to one-eighth of the floor area of the room.

This admirable requirement, like other provisions of the tenement laws, is of course not retroactive. The surveyors, however, report that out of the 48,695 rooms visited only 351 were dark and 41 more were classed as "semi-

dark." (Rooms opening on a court or shaft less than 12 feet in diameter).

In only 80 instances was it noted that basements were used for living purposes.

The law requires that hallways shall be lighted at night but the facilities for lighting are sometimes oil lamps, which may or may not be burning, or electric fixtures from which the bulbs may have been removed. Many hallways are also objectionably dark in the daytime.

9. **Toilet Facilities.** The law requires that in every new tenement house there shall be a water closet in every apartment of three or more rooms and one water closet for every two apartments of less than three rooms each and that the water closet compartment must be ventilated by a window, register, vent flue or skylight. This still seems to us, as it did ten years ago, an exceedingly weak point in the housing law. Interior toilets ventilated by registers, vent flues or skylights and lighted only by artificial light (often merely a lamp) are inevitably often dark and dirty. There seems no reasonable excuse for not requiring that all toilets in new buildings should be constructed with outside windows.

In spite of this fundamental weakness in the law, it appears that new tenement houses are, as a matter of practice, actually being built with toilets having outside windows. Indeed, it is in respect to toilet accommodations that the greatest improvement in tenement conditions has taken place during the past ten years. In 1913 Dr. Aronovici reported one third of all toilets studied as dark and in 1916 one fifth of the toilets studied in the old Wards 2, 6 and 9[2] were dark.

[2] The ward lines have been completely changed since this date.

In 1927, the inspectors report a total of 11,699 water closets for 12,640 apartments which means that over 10,000 apartments have their own water closets and less than 2000 small apartments share common water closets.

The progress made in eliminating dark and unventilated water closets is strikingly illustrated by the following figures.

WATER CLOSETS.

	Number	*Per cent of total*
Without outside windows	1,077	9.2
Unlighted	64	0.5
Unventilated	61	0.5
Unsanitary	96	0.8

The tenements of New Haven are well supplied with bath tubs. Of the 3179 tenement houses, 2195 are supplied with tubs (8155 tubs in all or nearly four per house) and 704 were reported as lacking tubs, while for 280 houses no report was made on this item.

There are 18,157 sinks and wash bowls in the 3179 tenement houses or one for every 2.7 persons. White porcelain sinks are rapidly replacing iron ones. With very few exceptions, all the houses within reach of city water are supplied with it.

10. **General Conditions of Upkeep.** Finally, the inspectors reported their impressions as to general sanitary conditions which are summarized in the table below.

SANITARY CONDITIONS.

		Per cent reported as		
	Number of reports	*Good*	*Fair*	*Bad*
Rooms	3,030	73	24	2
Yards	2,981	79	16	4
Stairs	1,780	71	26	3
Cellars	1,807	63	35	3

While these figures, of course, represent only subjective impressions they would appear to indicate very satisfactory conditions, much superior to those obtaining ten years ago. Some further attention to the condition of cellars would appear to be indicated. The yards on the other hand seem to be in excellent condition; and it is encouraging to note that garbage cans were reported as present in 2940 instances and absent in only 42 cases.

A somewhat serious condition is created in certain sections of the city[1] by the backflooding of cellars from the city sewers at times of heavy rain. This problem will be dealt with by the system of relief sewers recommended as a part of the Fuller program to be discussed in a later chapter.

11. **Summary and Conclusions.** It appears from this survey that 49,499 persons or 27 per cent of the population of New Haven, live in tenement houses, occupying 12,640 apartments in 3179 different tenement buildings. The typical tenement house is a three story building, housing as a rule either 3 or 6 families. More than one third of the buildings are of fire-resistant construction. They are usually provided with front and back stairs but not as a rule with outside fire escapes (except of course in the case of the few tenements over 4 stories in height). There are on the average 89 persons per 100 rooms and the average room has an area of 1416 cubic feet. The rooms are generally well lighted. Only 3 per cent of the apartments are

[1] Church St., from George to Elm; Orange and State Streets, from George to Bradley; Temple St., from Crown to Trumbull; Lincoln St., from Trumbull to north of Bradley; Chapel St., from College to Olive; Court St., from Church to Olive; Elm St., from College to Orange; Oak St., from Broad to Congress; Congress Ave., from Lafayette to Meadow; Meadow St., from Congress to Whiting; Orange St., from Lawrence to Willow; Livingston St., from Edwards to Canner; Winchester Ave., from Sachem to Canal St., from Bristol to Munson; Division and Starr Streets, from Winchester to west of Newhall.

seriously overcrowded. More than five-sixths of the apartments are provided with water closets of their own unshared with other apartments and nine-tenths of all water closets are provided with outside windows.

It is evident that conditions have vastly improved since 1913 and 1916 particularly in respect to overcrowding and cellar dwelling, insanitary toilets and untidy back yards. The progress made reflects the greatest credit on the inspection force of the Health Department and the Fire Department,—to whose efficiency and tact it is in large measure due.

The few instances of room overcrowding, unlighted toilets, untidy cellars and absence of garbage cans are already receiving attention; and on the whole the present picture of housing in New Haven is one in which the Health Department and the city may take a justifiable pride.

There are several specific points, however, in regard to which the Building Code might be materially strengthened without involving any serious financial burden and with substantial advantage to the public health. We would urge as

Recommendation 1. That the Health Officer and the Fire Marshal should be asked to give consideration to the adequacy of the present Building Code, particularly in regard to the possibility of requiring that water closets in new buildings should be provided with outside windows, of improving the lighting of hallways and of improving facilities for egress in case of fire in both two family houses and tenements.

Chapter III.

WATER SUPPLY.

With the cooperation of R. H. Suttie, Assistant Professor of Civil Engineering, Yale University.

1. **Description of System.** The duty to provide a safe and satisfactory water supply is the first basic essential of municipal sanitation, For New Haven this obligation has been well met.

The city obtains its water supply by contract with a private corporation, the New Haven Water Company. This corporation began to develop its system in 1860 under the inspiration of Eli Whitney, pumping from Mill River at the "Point of Rocks" by water wheels to the reservoir near the head of Prospect Street, which is still in use.

The company now serves not only the city of New Haven but also a number of adjacent towns with approximate populations as indicated below.

APPROXIMATE POPULATIONS SERVED BY NEW HAVEN WATER COMPANY.

New Haven	182,000
West Haven	18,000
Wallingford	13,000
Milford	14,000
Hamden	10,000
Branford	7,000
Smaller towns*	6,000
	250,000

* Including areas in East Haven, North Haven, Cheshire, etc.

These figures are based on the official census estimates for July 1, 1927. They are probably low for certain subur-

ban areas which have grown very rapidly in recent years but this error is perhaps balanced by the fact that outlying rural sections of many of these towns are not served. A population of 250,000 seems the safest basis for comparison.

The New Haven Water Company now controls eight sources of supply, as follows,—listed in geographical order from west to east.

Supply	*Watershed area Sq. mi.*	*Approximate average daily use in 1926 Million gallons*	*Storage capacity Million gallons*
Milford	1.3	1	16
Maltby	13.5	3	330
West River ...	13.6	9	1,897
Prospect	1.5	.50	10
Wintergreen ...	1.8	1	100
Mill River	37.7	8.50	264
Saltonstall	19.8	6	1,104
Branford	3.7	.75	52
	92.9	29.75	3,773

The chief sources for the city of New Haven are Maltby, West River, Mill River and Saltonstall. In addition, Wintergreen and Prospect provide high pressure supply for certain elevated areas, while the Milford and Branford supplies serve certain outlying towns. The main distribution system of New Haven includes some 450 miles of pipe line, supplied by the four major sources (Maltby, West River, Mill River and Saltonstall). The water mixes in the pipes near the center of the town and the proportion drawn from each source varies with local conditions of flow and storage. The New Haven city water, except that from Mill River and Saltonstall, all flows by gravity.

2. **Adequacy of Supply.** The daily consumption is thirty million gallons; since the total storage capacity is 3773 million gallons, this amounts to about 126 days' supply.

This figure is insufficient to provide a safe margin for possible dry periods, in fact at times in the past the city has actually been within thirty days of a water famine. The storage is altogether inadequate to allow for further increase in population. The Water Company began in 1925 to construct a dam on Crooked Brook and tunnels to develop large new watersheds in North Branford, Guilford, and Madison. The ultimate watershed area to be added amounts to fifty-two square miles and when completed, about 1932, the new storage reservoir will hold sixteen thousand million gallons. With this additional storage, New Haven will be ensured of an ample supply for a long period. The city is to be congratulated on the foresight shown in these provisions.

New Haven has in the past been notorious for wastage of water. Actual use in an American city does not average over sixty gallons per capita. When our survey was made ten years ago, New Haven's consumption was 180 gallons per capita, which meant that about two-thirds of the water supply was being wasted by leakage from street mains and through defective plumbing fixtures in homes.

The best remedy for water waste lies in the installation of water meters, which serve as an automatic check on waste in the household. Coupled with this should be careful inspection of street mains. Meters have been gradually and partially introduced by the New Haven Water Company. All services in the outlying towns are metered, while in the city of New Haven there were on December 31, 1926, 6517 meters out of a total of 23,927 services, or 28 per cent. All large consumers have meters, however, and all domestic services are regularly inspected and meters required if leaky plumbing is not repaired. By these means the consumption for the whole Water Company

district has been substantially reduced to approximately 120 gallons per capita. This is not far in excess of the median value for a group of 33 American cities included in the last report of the American Water Works Association which shows a minimum of 56 gallons, a median of 114 gallons and a maximum of 275 gallons. Three comparable New England cities, with 97-100 per cent of their services metered show, on the other hand, much better results (Worcester, 90 gallons; Springfield, 91 gallons; Hartford, 96 gallons). Furthermore, while the average consumption for the whole Water Company district is 120 gallons, the consumption for the city of New Haven must be substantially higher, since the services of the city are only 28 per cent metered and those for the population outside the city are over 90 per cent metered. Believing that the total consumption for the city of New Haven could be reduced 25 per cent by the general installation of meters, we would strongly urge that steps be taken to attain this end.

3. **Measures for the Protection of the Sanitary Quality of the Supply.** The vital point in a public water supply is of course its sanitary quality,—the extent to which it is protected against the possibility of intestinal pollution. New Haven had one disastrous demonstration of the risk from such a source in the typhoid epidemic of 1901 caused by the pollution of Lake Dawson, one of the West River reservoirs.

The New Haven Water Company owns some 36 square miles out of the total 93 square miles in its watersheds. On the land which it owns it has carried out extensive and valuable re-forestation operations in cooperation with the Yale School of Forestry. No trespassing is permitted on

the company property and fishing is allowed only on Lake Saltonstall and even there only under very definite restrictions.

The watershed area, whether under company or other ownership, is regularly patrolled by a force of men who use every effort to keep out any chance pollution, and the lake foremen at the various reservoirs are constantly on the alert to safeguard the quality of the water. Even horse droppings along roadways near the reservoirs are systematically removed. The total population on the watersheds is not large, except in the case of the Mill River (Lake Whitney) supply, where there are some 10,000 people or 275 per square mile. On all the other sheds taken together, there are about 1000 people or 20 per square mile.

In spite of all precautions, it is today recognized that no surface water supply can ever be a safe source of drinking water without the intervention of a reliable process of purification. When the New Haven survey of ten years ago was made, only two of the city supplies were purified. Today, however, the Mill River supply is treated, first by slow sand filtration, through twelve quarter-acre beds (situated just below the dam on Whitney Avenue) and then by chlorination, while the other supplies are all stored and chlorinated. These treatment plants are well designed, carefully operated and entirely adequate to meet the needs of the situation.

There is one relatively minor point which seems to us still to require attention from both a sanitary standpoint and an esthetic standpoint. The filtered and chlorinated water from the Mill River supply, after being purified to a high degree, is stored in the open reservoir on Prospect Hill where its attractiveness may be impaired by plant and animal growth and where it is exposed to the slight but

real possibility of pollution through trespassers and still more through the sea-gulls which may pass from the sewage-polluted harbor to this sheet of water. We believe that this open reservoir should be replaced by a covered one, which might possibly be located on Mill Rock ridge, and which would give additional high pressure service.

4. **Laboratory Examination and Results.** The Water Company maintains an excellent laboratory at the filter plant and daily chemical and bacteriological examinations are made of all supplies before and after treatment, (some 8000 samples a year being examined). The City Health Department also makes its own analyses about thirty times a year and the State Department of Health examines samples at intervals of one to two months.

There appears to have been a certain discrepancy between the results obtained by these three laboratories in the past and neither the City nor the Water Company Laboratory has used the most recent standard procedure. These differences have now been adjusted and check results were obtained in two series of tests run in parallel, at our request, during the months of December and January. The Water Company results and those obtained at the State Laboratory agree closely. For 1926 they were as follows, indicating that the water was of excellent quality.

BACT. COLI IN NEW HAVEN WATER SUPPLIES, 1926.

Supplies	*Percentage Positive Results.*			
	in 1.0 c.c.		*in 10 c.c.*	
	Company	*State*	*Company*	*State*
West River	0	0	0	3
Mill River	0	0	0	0
Saltonstall	0	0	1	0
Maltby	0	0	1	0
Wintergreen	0	0	2	0

5. **Appraisal Score.** Since the water from all sources fully meets the Appraisal Form standard of quality and since the public water supply is delivered to the homes of 99.6 per cent of the population, the city receives a full score of 40 points on this item.

6. **The Problem of Public vs. Private Ownership.** It is somewhat anomalous that a city of the size of New Haven should continue to obtain its water supply from a private company. Of 45 cities having populations of over 125,000 for which data were presented in a recent tabulation, 40 operate their own waterworks, (the exceptions being Bridgeport, Louisville, Oakland, New Haven, and Paterson). The contract with the Water Company expires in 1928. The city must either renew this contract for another twenty-five year period or purchase the property of the company, as it has the right to do. This has been a very live problem during the present winter.

The question involved here, is as we see it, purely an economic one. The supply provided by the New Haven Water Company has, in recent years, been of excellent quality and the entire policy of the company, from an engineering standpoint, has been wise and progressive. The powers of the State Health Department should be ample, in any case, to ensure a safe supply in the future. On the other hand it seems absurd to doubt the ability of the city to manage its own water supply with efficiency, in view of the almost universal experience of other American cities. There are two questions involved, first whether the State Public Utilities Commission can be relied upon to protect the city against exorbitant rates in the future and, second, whether with a reasonable return to the investors in the company the necessary cost of duplicating

financial and legal services involved in private operation and the capital charge on progressively mounting property values is or is not overbalanced by the economies of operation involved in private as compared with municipal management. These are questions for the financier rather than the sanitarian.

7. **Subsidiary Supplies.** According to estimates of the City Health Department there are not over 100 dwellings in the city which are not connected with the public supply. This is an excellent record. Nevertheless the private supplies used by these hundred families are not without their health significance. It is also estimated that some 100 wells are used for auxiliary purposes by various industrial concerns and some of these may be sources of drinking water. We believe that the City Health Department should conduct a canvass of this situation, should determine the sanitary quality of these subsidiary supplies and should make certain that any which may prove dangerously polluted are eliminated.

In spite of the excellent quality of the city water supply there is still a considerable sale of spring water in New Haven. The State Dairy and Food Commissioner informs us that five leading firms sell annually an amount totalling over 650,000 gallons in the city. Even in City Hall spring water is regularly purchased. It is impossible that spring waters can be any safer than such a public supply as that of New Haven, although their sanitary quality is supervised by the Dairy and Food Commission. The practice of using such waters is distinctly to be deprecated as a needless economic waste and a possible health hazard in a city with such a good public supply as ours.

8. **The Problem of Fire Pressure.** The problem of deficient fire pressure in New Haven has received considerable

attention from fire insurance companies and should be mentioned here, in spite of the fact that it is essentially an economic rather than a sanitary one.

The last edition of "Water Works Practice" says in regard to this point,

"The trend today is toward higher normal pressures. In recent years, a number of the larger cities have materially increased their pressures, notable among these being New York, Newark, Jersey City, Springfield, Mass., Buffalo, Providence, Louisville and New Orleans.

"A normal static pressure of 60 to 75 pounds per square inch is now considered desirable, presenting the following advantages:

(a) It will supply ordinary consumption for buildings up to 10 stories in height.

(b) Gives effective sprinkler service in buildings of 4 or 5 stories.

(c) Permits direct hydrant-service for a few hose-streams, insuring quicker operation by the fire department.

(d) Allows a larger margin of fluctuation in local pressures in meeting sudden drafts, and offsets losses due to partial clogging or excessive length of service pipes."

In New Haven the general pressure is necessarily determined by that of the lower revervoirs since the water mixes freely in the pipes. The Prospect Hill, East Haven (Saltonstall) and Cheshire (Prospect) reservoirs are at elevations which would make possible maximum pressures of between 55 and 62 pounds per square inch (computed from reservoir to sea level) and actual pressures are considerably less on account of frictional loss.

The National Board of Fire Underwriters recommend that pressures in New Haven be increased to provide ade-

quate automatic sprinkler supply in buildings five stories high. This means an average in the heart of the city of approximately 50 pounds pressure, or an increase of about 15 pounds over and above existing pressures. This is in line with the plans of the New Haven Water Company, which contemplate, by reconstruction or replacement, the elimination of certain of the existing reservoirs so as to permit of this much needed increase of pressure.

9. **Summary and Recommendations.** On the whole, New Haven is to be congratulated on the possession of a water supply of high sanitary quality which should be ample to care for future development with the completion of the North Branford reservoir.

Four minor recommendations only seem to be indicated as follows.

Recommendation 2. That the open reservoir on Prospect Street should be replaced by a covered reservoir, perhaps on Mill Rock.

Recommendation 3. That steps should be taken to reduce water waste by a systematic and progressive increase in the metering of domestic services.

Recommendation 4. That the City Health Department should make a canvass of private wells used in homes or industrial plants for potable purposes, should analyze the waters of such wells and condemn those which are not of safe sanitary quality.

Recommendation 5. That in view of the excellent quality of the public supply the use of spring waters should be discontinued in the City Hall and in the offices of social agencies connected with the Community Chest and discouraged elsewhere.

Chapter IV.

SEWERAGE AND SEWAGE DISPOSAL.

1. **History of the Problem.** In our survey of ten years ago it was pointed out that the discharge into New Haven Harbor of the untreated sewage of the city not only created highly offensive conditions but also constituted a distinct menace to the public health. We cited the results and conclusions of the study made by the U. S. Public Health Service in 1916 and recommended that immediate steps should be taken to study the problem of sewage treatment and on the basis of such a study to proceed as promptly as possible to the installation of purification works; and that until such treatment had been accomplished, the taking of shellfish from New Haven harbor and bathing in the more polluted areas of the harbor should be prohibited.

The recommendation for a study of the sewage treatment problem was at once adopted. An experiment station was established at the East Street outfall and studies were conducted there during 1917 and 1918 under the direction of a joint Citizens' and Aldermanic Committee* which led to a report made in the latter year. This report confirmed and strengthened the conviction that sewage treatment was an urgent necessity and led to the conclusion that sedimentation and disinfection were the treatment processes indicated, and that it would be best to plan for four treatment plants in the vicinity of the present outfalls. A particular type of sedimentation and disinfection was recommended as probably most economical, and it was urged that detailed plans and estimates for

*C.-E. A. Winslow, Chairman, S. E. Barney, A. B. Hill, J. W. Murphy, E. S. Nelson, H. B. Sargent.

the East Street plant should be at once prepared and the installation completed as soon as possible.

After this report was made, no further action was taken by the city for a period of seven years, while the harbor continued to become more and more polluted although the Health Department repeatedly called attention to the importance of cleaning up its waters. In September, 1925, City Engineer E. S. Nettleton made a report on the possibilities of sewage treatment, and in March, 1926, Mr. George W. Fuller of the firm of Fuller and McClintock of New York, the leading expert on sewage treatment in the United States, was employed to study and report upon the problem. His admirable report, presented December 1, 1926, will be the main basis for our subsequent discussion.

2. **The Sewerage System.** The sewerage system of New Haven comprises approximately 155 miles of sewers which, except in the Westville district, are designed on the combined plan to take both storm water and domestic sewage. With the exception of the three wards on the eastern shore of the harbor, there are very few streets lacking sewerage facilities. In addition to the discharge from the city proper, the system carries the sewage from a section of Hamden with a population of about 4,500 persons.

Mr. Fuller finds that sewer construction and maintenance has in general been excellent in New Haven. On the other hand, certain of the older sewers (2.5 miles in length) are now in need of replacement, and relief sewers (12.3 miles in length) are urgently required to prevent the backflooding of cellars which now occurs after heavy rains in the downtown district. These necessary reconstructions (with some additional storm water regulations) will cost $915,000, and the development of intercepting and trunk

sewers and the building of pumping stations for the Eastern Shore District will cost $560,000 more. Mr. Fuller recommends that sewerage in the East Shore wards should be conducted on the separate system and points out that in order to protect the water supplies of the city and to keep its rivers free from pollution similar separate systems of sewers should be developed in the towns of Woodbridge, North Haven, East Haven and Hamden to connect with the New Haven system, under agreements involving reimbursement for the additional expense of transporting and treating the sewage from these outlying communities.

The conditions as to house sewerage in the East Shore and other outlying wards will be discussed in Chapter IX. Considerable extensions of the city sewers in these regions will be necessary in the future.

3. **Present System of Sewage Disposal and Resulting Harbor Pollution.** The sewers of New Haven discharge into the harbor from five main outfalls at the Boulevard on the West Shore, at Meadow Street and East Street at the head of the harbor and at James Street and Poplar Street in the mouth of the Quinnipiac River. There are 18 storm overflows which discharge at other points and numerous private drains and sewers. The flow from the main outfalls as given by Mr. Fuller is as follows in millions of gallons per day: Boulevard, 5.6, James Street, 0.7, Meadow Street, 4.2, East Street, 9.3, Poplar Street, 0.5. In addition he estimates that 2.8 million gallons enters from private sewers, making a total of 23.1 million gallons per day. This large volume of sewage is discharged in most cases close to the shore, and since New Haven harbor is generally shallow with extensive flats extending from the shore line to the dredged channel, the results of such disposal are peculiarly obnoxious.

Over four billion gallons of sea water enter New Haven harbor from the Sound twice a day on the flood tides, giving a daily theoretical dilution of over 300 parts of sea water to one part of sewage. This would be an ample dilution to maintain satisfactory conditions if mixture were complete. As a matter of fact, however, the sewage does not pass entirely out of the harbor with the ebb tide, but is in large measure pushed back by the succeeding flood, sewage solids ebbing back and forth for days and ultimately being deposited on the harbor floor. As a result, Mr. Fuller finds substantial depletion in the dissolved oxygen of the harbor waters. He describes the conditions as follows: "The discharge of thousands of tons of settleable sewage solids each year has formed accumulations of putrescible matter on the bed of the harbor and its branches, ranging in depth from a few inches to over ten feet. The decomposition of these solids during warm weather exhausts the oxygen naturally contained in the harbor water, interferes with fish life, and causes objectionable odors discernible at considerable distances from the water front. In the relatively shallow inner harbor and the lower stretches of the rivers, where large areas of foul deposits are exposed at low tide, conditions are particularly disgusting to sight and smell, and constitute an additional menace to public health in that flies may carry infection to nearby markets and homes. Oil sleek on the harbor and rivers, increase of floating solids, and discoloration due to dye works wastes, show the absence of a suitable standard in this branch of municipal cleanliness. The above conditions generally are prejudicial to continued development of the city in that they needlessly hazard property values along the water fronts."

New Haven Harbor was once the site of valuable oyster layings, but studies by Newlands and Ham in 1910, by the

U. S. Bureau of Chemistry in 1915, and by the U. S. Public Health Service in 1916 showed that the harbor waters were so heavily polluted as to make the taking of shellfish from it a source of very real danger. The State Department of Health has therefore prohibited the direct marketing of oysters from any part of the harbor above a line drawn from Oyster River Point to Old Light; and more recent studies conducted last summer showed that the pollution had so increased that it has now been found necessary to extend the prohibited area to a line drawn from Oyster River Point to Morgan's Point.

Most serious of all, perhaps, is the danger to persons using the harbor waters for bathing. In 1926-27 an extensive study of the actual condition of the bathing beach waters of the harbor was made by Mr. David Moxon of the Department of Public Health of the Yale School of Medicine. Samples of water at 11 bathing beaches on the West Shore averaged 949 bacteria (on agar at 20°) and 19 colon bacilli per cubic centimeter; samples at 16 bathing beaches on the East Shore averaged 3,084 bacteria with 14 colon bacilli; samples from 3 beaches in the Quinnipiac River averaged 2,439 bacteria with 68 colon bacilli. The beaches outside of Lighthouse Point were the only ones of acceptable sanitary quality. These figures indicate a highly dangerous degree of pollution, yet all these beaches are extensively used during the summer season, some of them by very large numbers of persons. Ciampolini and Hitchcock analyzed a series of 61 cases of typhoid fever occuring during the summer months of 1921 and 1922, and concluded that most of them were undoubtedly due to bathing in the harbor. The Health Department has repeatedly issued warnings against bathing in the harbor waters and has posted warning signs at various points. The control of

such a practice in hot weather is, of course, practically impossible. The height of anomaly is, however, reached in the fact that the Park Department of the city maintains and operates at public expense two public bathing beaches within the prohibited area, one at Fort Hale Park and the other in the Quinnipiac River. The Park Department, acting on the advice of the Health Department, attempted to close these beaches in 1926, but finally yielded to pressure and re-opened them—as public municipal bathing beaches, adorned with Health Department signs indicating that the water was unsafe to bathe in.

It seems obvious that this situation should not be permitted to endure; but whatever attitude the public authorities may take, there will always be more or less unauthorized bathing in the waters of New Haven harbor. The only real remedy is the treatment of the sewage so that the present gross pollution of the harbor may be eliminated.

4. **The Fuller Plans for Sewage Treatment.** Mr. Fuller agrees with the Citizens' and Aldermanic Committee of 1918 in recommending that the sewage of New Haven should be treated by sedimentation and disinfection at four water-front plants, three situated respectively adjacent to the present Boulevard, Meadow Street and East Street outfalls, and the fourth (to care for the James and Poplar Street outfalls) to be located near the northern end of Nathan Hale Park. Changes in the composition of the sewage and progress in the art of sewage treatment during the past ten years lead Mr. Fuller, however, to recommend plain sedimentation, followed by chlorination during the summer months, instead of the combined sedimentation and acid-disinfection process suggested in 1918. This recommendation is eminently wise. The sludge from the sedi-

mentation tanks is to be disposed of at sea; and the total cost of installation and equipment is estimated at $1,525,000.

The program outlined in Mr. Fuller's report is well-considered, sound and adequate. It has been approved by the State Department of Health, the State Water Commission, and the Federal authorities concerned. It is of urgent importance that it should be carried out with as little delay as possible.

5. **Summary and Recommendations.** The present method of discharging the untreated sewage of the city into New Haven harbor converts that harbor, which should be one of the city's greatest assets, into an offense against public decency and a menace to the public health. It injures property values and forms a constant danger to those who use the harbor waters for bathing during the summer season. The Fuller report outlines a practical and economical program of sewage treatment which will gradually restore the harbor to a state of reasonable purity—a step which seems vitally essential for the health and prosperity of the city. Until this plan is carried out, every effort should be made to discourage the practice of bathing in the harbor and the maintenance of public municipal bathing beaches in the prohibited areas should be absolutely discontinued. We would therefore urge the following recommendations:

Recommendation 6. That bond issues for the initiation of the Fuller program of sewerage extension and sewage disposal should be authorized without delay and that the fundamental program (involving an expenditure of three million dollars) should be completed within a period of five years.

Recommendation 7. That the Park Department should close all municipal bathing beaches inside of a line drawn from Oyster River Point to Old Light Point* (not including Lighthouse Beach) and that the Health Department should continue its efforts to discourage bathing within this area by every possible means.

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* Mr. Moxon's studies indicate that the Lighthouse Point beaches between Old Light and Morgan's Point are in reasonably safe condition.

Chapter V.

COLLECTION AND DISPOSAL OF GARBAGE AND REFUSE.

1. **General System.** The systematic collection of garbage was first instituted in New Haven in 1876, through the efforts of that picturesque pioneer in sanitation, Professor W. H. Brewer. It was first placed under the Board of Health, but with a growing realization of the fact that the handling of municipal wastes is rather an engineering than a health problem, it was in 1915, at the request of the Board of Health, removed from the jurisdiction of that Board and placed under the Department of Public Works.

At present the Department of Public Works supervises and pays for the collection of garbage in all parts of the city except Ward 32, which employs its own contractor. The Department makes its own collections in the northwestern third of the city and pays contractors to make them in all other areas as indicated in the table below.

GARBAGE COLLECTION. 1926.

District.	*Territory Included.*	*People.*	*Eating Houses.*	*Contractor.*	*Cost of Collection.*
A	Northwestern part of City. North of Chapel St. West of State St. (Does not include Westville.)	55,797	42	City teams. 2 men per team. 7 teams.	$24,344.32*
B	Southwest part. South of Chapel, West of State. (Does not include Westville.)	53,934	121	A. N. Farnham. 1 man per team. 8 teams.	18,000.00

* Net cost, see p. 65.

District.	*Territory Included.*	*People.*	*Eating Houses.*	*Contractor.*	*Cost of Collection.*
C	Fair Haven. Cedar Hill Section and Congested part of City east of State Street.	56,309	27	R. D. Daley. 1 or 2 men per team. 5 teams.	18,000.00
D	Ward 31 (Fair Haven Hts.).	2,981	3	R. Douglass. Single horse wagon. Part time.	500.00
E	Westville (Wards 29 and 30).	6,559	3	A. N. Farnham. 1-2 teams. 1 man per team.	3,500.00
F	Morris Cove (Ward 33).	1,935	1	G. Triumpho. 2 one horse wagons. Part time.	936.00

The amount of garbage collected from District A in 1926 was 4,354 tons and the total amount collected from all areas is estimated at 14,665 tons, or 37 tons per day.

All of the garbage collected is disposed of by feeding to hogs under conditions which will be discussed below.

In addition to these major collections, the Health Department licenses 29 collectors of offal from hotels, meat markets and the like which is disposed of in 3 licensed rendering plants. The Street Department disposes of dead animals by delivering the larger ones at the rendering plants and burying the smaller ones (644 carcasses thus disposed of in 1926).

No official provision is made for the collection of ashes and rubbish. Each householder must contract for this service with private collectors who dispose of the materials on tide flats and dumps under the supervision of the Department of Public Works.

2. **Adequacy of Garbage Collection.** According to the contract with the garbage collectors, collections from residences must be made twice a week and from restaurants,

three times a week. Daily collections have recently been inaugurated for the larger restaurants. Complaints of failure to call for garbage are made to the Board of Health and at once transmitted to the Department of Public Works. If the contractors are at fault, they are given twenty-four hours to collect and then fined $2.00 for each offense if the garbage remains uncollected. Ten years ago, complaints of this nature were very frequent, half a dozen a day;—now the system in general works much more smoothly and complaints average less than one a day. The insanitary conditions resulting from carelessness and inattention on the part of collectors, which we found so frequent in 1916, have now been reduced to a minimum.

The agreement between the contractors and the city provides that the garbage "shall be removed in such manner and in such wagons as shall be designated by said Department of Public Works and said receptacles shall be kept water-tight and securely and tightly closed when in transit" and that "said removal shall be made to the satisfaction and approval of said Department of Public Works and in compliance with its rules and regulations." The Department of Public Works distributes circulars to householders giving specific directions as to their part in facilitating the handling of garbage in an inoffensive manner. These circulars emphasize that the garbage can should be of galvanized iron with a deep over-lapping cover and should have a capacity of 10 gallons for every 4 persons (never less than 10 gallons for any household), and that it should be placed in a convenient location. Only drained food waste should be placed in the garbage receptacle, and if cans, paper, ashes or rubbish are mixed with the garbage, the mixture cannot be collected. Neglect on the part of the householder to fulfill these conditions will naturally lead to unsatisfactory results.

3. **Disposal of Garbage.** The city maintains its own hog farm on the grounds of the Poor Farm at Springside for the area served by its own collectors. The Farnham hog farm occupies an adjacent area and the Daley farm is on a high ridge on the outskirts of Fair Haven. Each of these farms has from 700 to 1,500 hogs, depending on the season. Douglass and Triumpho maintain much smaller farms on East Grand Avenue and near Morris Cove respectively.

Neither of the three large farms is representative of this type of garbage disposal at its best. The hogs are for the most part housed in tumble-down dirty shanties and decomposed garbage in, under and around the feeding platforms is highly offensive. The Daley farm is by far the best of the three, being located on a steep hillside with excellent drainage, and its upkeep is also good. Relatively slight expenditure would make this plant an ideal one. At Springside, two excellent new breeding-houses have recently been completed, but the location of this farm in a muddy hollow, is very poor and the upkeep as well as much of the construction, here and at the Farnham place, leave much to be desired.

It seems probable that the growth of the city will before very many years make the Springside properties too valuable to be used in this manner.

It is impossible to expect contractors who have only an annual contract (as is at present the case) to spend the money necessary to put their farms into the best sanitary condition. It would be highly desirable to make such contracts on a five-year basis and then to require the reconstruction of the farms along the admirable lines which have been developed in other cities.

There has been justifiable complaint on the part of the regular contractors of the practice on the part of certain

farmers of collecting the best garbage from certain districts for their own use. Such irregular collections work hardship on the contractors by taking the best materials for hog-feeding away from them, and the results are highly unsatisfactory since there is no control over the collections made in this manner. The city is very properly taking steps to eliminate such practises.

4. **Cost of Garbage Collection and Disposal.** The net cost to the city of garbage collection and disposal is indicated in the table above. The sums set down opposite the names of the contractors represent the sums actually paid to them. The net cost for District A is computed as follows. For the wages of collectors in this district, the city in 1926 paid $22,974.77; for equipment and incidentals, $810.73; for upkeep of horses, wagons and office, $13,500.00; for maintenance of the Springside hog-farm, $3,361.67; and for reconstruction of the plant at the hog farm, $3,757.00. Adding these sums together and subtracting $20,059.85, the revenue obtained from the sales of pork and pork products of the farm, we get $24,344.32.

It will be noted, first of all, that the hog farm at Springside paid a substantial profit over the cost of its operation and reconstruction: $12,941.18 (the difference between $20,059.85 and $7,118.67). In addition to the expenses listed above, the Department of Public Works spent $1,643.25 on inspection of the whole collection system, public and private. We may properly pro-rate the cost of this inspection and after so doing this gives us the following costs per capita and per ton.

	Per ton.	*Per capita.*
Net cost, area served by city collectors.....	$5.71	$.45
Net cost, areas served by contractors.....	4.08	.35
Net cost for entire city.....	4.56	.38

The costs per ton for the city district are distinctly higher than those for the districts served by the contractors, largely perhaps on account of a higher wage scale. The costs for the city as a whole are reasonable. In 1924 Dr. L. E. Poole made a careful comparative study of costs of garbage collection and found New Haven midway between Hartford and Bridgeport in this respect.

5. **Conditions Resulting from the Absence of a Systematic Collection System for Ashes and Rubbish.** The most serious deficiency in the present system of handling refuse in New Haven—and, next to that of harbor pollution, the most serious of all New Haven's strictly sanitary problems—is the lack of any systematic provision for removing ashes and rubbish. Ten years ago, we pointed out the grossly insanitary conditions which must necessarily result from such an arrangement and the economic waste involved. In the poorer districts it is inevitable, when no systematic collection is available, that ashes and rubbish shall accumulate all winter awaiting a spasmodic clean-up in the spring. Conditions have been vastly improved over those which obtained in 1916 by the activities of Dr. Rice's sanitary inspectors, but they will not be satisfactory until there is provision for a regular collection of ashes and rubbish throughout the year under public auspices.

The ashes and rubbish accumulated by the collectors are disposed of by dumping on two public dumps on the Boulevard and on James Street, respectively. Certain small dumps are also maintained on private property under the supervision of the Health Department. The two public dumps are carefully controlled by the Department of Public Works and are in general kept in satisfactory condition.

Ten years ago there were fifteen public dumps maintained by the city and the reduction in their number, with

the careful supervision given to the two still in operation, is a cause for satisfaction.

With the filling up of the Boulevard and James Street dumps, which is proceeding rapidly, it is however probable that the city must seek some other mode of disposing of its rubbish in the future.

6. **Present System of Collecting Ashes and Rubbish Costly as Well as Insanitary.** The collection of ashes and rubbish by small contractors dealing with individual householders is not only an unsatisfactory procedure but an expensive one.

In order to gain some idea as to the actual financial burden involved, Dr. Rice was good enough to ask his sanitary inspectors to make a canvass of a series of typical households in various sections of the city. Two thousand one hundred and seventy-three households were visited, selected so as to represent various economic groups in the population, and the actual cost of removal of ashes and rubbish ascertained. The results are indicated below.

ANNUAL COST OF ASHES AND RUBBISH COLLECTION—2,173 REPRESENTATIVE FAMILIES.

Cost per Annum.	*No. families single and two-family houses.*	*Tenements and apartments.*	*Total.*
Under $1.00.....	6	2	8
1.00.....	3	34	37
1.50.....	13	22	35
2.00.....	33	146	179
2.50.....	15	65	80
3.00.....	53	422	475
3.50.....	7	99	106
4.00.....	41	395	436
4.50.....	17	4	21
5.00.....	102	243	345
5.50.....	6	9	15

Cost per Annum.	*No. families single and two-family houses.*	*Tenements and apartments.*	*Total.*
Under $6.00	63	82	145
6.50	2	18	20
7.00	20	53	73
7.50	7	8	15
8.00	29	52	81
8.50	2	18	20
9.00	14		14
9.50			
10.00	30	8	38
12.00	13	6	19
13.00	1		1
14.00	2	3	5
15.00	22	12	34
18.00	4		4
20.00	8		8
25.00	1	3	4
34.00	1		1
35.00	1		1
56.00	1		1
Total	517	1,704	2,221

These figures are estimates, and in all probability considerably below the true figure. As they stand, they give a total cost of $10,303 for the 2,221 families or $4.64 per family. If we assume five persons to a family, this gives a cost of $0.93 per capita.

The cost of collecting these materials on a municipal basis or through arrangement with a large contractor may be deduced from the following considerations. The total tonnage of ashes and rubbish in an American city will average about four times the tonnage of garbage, but the net cost of removal per ton is much less on account of less frequent removal. A study made by Dr. L. E. Poole in the Department of Public Health of the Medical School two years ago showed that four large New England cities in 1924 paid for collection and disposal of garbage alone $3.04

per ton or $.24 per capita, while four other cities having combined collection of all wastes paid about the same amount per ton ($3.32) and $1.04 per capita. This would make the cost for collection of ashes and rubbish about $.80 per capita, or three times the cost of collecting garbage alone. About the same ratio (3:1) for the cost of collecting ashes and rubbish, as compared with the cost of collecting garbage, is indicated by the figures cited in Hering and Greeley's standard text on this subject. If we take the present New Haven per capita cost of garbage collection (38 cents) as a basis, the collection of ashes and rubbish would come to about $1.20 per capita. The present unsatisfactory system costs, according to our estimate, nearly as much as a really adequate one. If, however, a public collection system were inaugurated, we would urge that provision be made, as at present, for collections from the cellars, since a system which requires ash and rubbish cans to be placed on the sidewalks works hardship on the householder and produces unsightly conditions in the streets.

7. **Summary and Recommendations.** The general system of garbage collection now in force in New Haven seems on the whole satisfactory and reasonably economical. The system of disposal by hog-feeding is a cheap one but it could, and should, be conducted in a more cleanly and sanitary manner than is at present the case.

In order to improve conditions at the hog-farms of contractors, it would be highly desirable to make five-year contracts so that the contractors may be enabled to provide for the necessary capital investments.

The system of collecting ashes and rubbish by private arrangement between the householders and a multitude of unlicensed and often irresponsible collectors is a highly un-

satisfactory one, and makes many sections of the city unsightly and offensive during the winter and spring seasons. Systematic collection under contract with the city would bring New Haven in line with other progressive cities and would cost the citizens as taxpayers something like $220,000 a year as compared with about $160,000 a year which they are now paying out in their individual capacities with quite inadequate results. The city Fire Marshal has recently pointed out the importance of such a step from the standpoint of fire protection. If this can not be done, the collectors of ashes and rubbish should at least be licensed and supervised as to regularity of service, methods of handling and charges, by the Police Department or the Department of Public Works.

The growth of the city and the filling up of the present public dumps is likely to create serious problems in the near future—problems which it is none too soon for the city to study seriously.

Recommendation 8. That the Department of Charities, the Department of Public Works, and the Department of Health should make a joint study of the problem of garbage disposal by hog feeding with a view to suggesting improvements in construction and upkeep at Springside.

Recommendation 9. That the contracts for garbage collection should be let on a five-year basis and that definite standards of construction and upkeep at the hog farms should be insisted upon, as a part of such contracts.

Recommendation 10. That a regular system of collection of ashes and rubbish should be introduced, preferably on a contract basis, and with provision for collection from the cellars.

Recommendation 11. That the problem of disposal of ashes and rubbish in the future be given careful study by competent experts with a view to formulating the most satisfactory and economical program to be adopted as areas for dumping become more and more difficult to find.

Chapter VI.

THE MOSQUITO PROBLEM.

1. **Conditions in 1916.** The mosquito problem is of importance from two distinct standpoints,—in relation, respectively, to health and to comfort. The presence of Anopheles mosquitoes which breed in fresh water marshes and sluggish streams is a constant menace to health, since these mosquitoes may be carriers of the parasite of malaria; while various other species of mosquitoes, belonging to the genera Culex and Aedes render life miserable even though they do not cause illness.

When we made our first survey in 1916, both salt and fresh water marshlands in West Haven, along the West River, Mill River and the Quinnipiac and in East Haven were causing a gross mosquito nuisance and the fresh water areas were breeding enough Anopheles mosquitoes to create a very considerable malaria problem. By a very partial canvass of physicians we obtained records of 85 cases of malaria seen during the year 1916, most of them located in the neighborhood of West River, Beaver Swamp, Mill River and the Quinnipiac.

2. **Progress During the Past Ten Years.** Systematic attempts to control mosquito breeding were begun by the Civic Federation of New Haven in 1912 and greatly stimulated by a law passed in 1915 which gave the director of the Connecticut Agricultural Experiment Station power to make rules and orders concerning the elimination of mosquitoes and mosquito breeding places or areas and to survey, drain, fill or otherwise eliminate any such breeding

places, funds for the purpose being provided locally. When the drainage operation is once accepted the State is responsible for its upkeep.

As a result of this legislation, many of the worst breeding places within the city of New Haven and in West Haven have been abolished including all the major Anopheles areas. The decrease in malaria which has ensued is well indicated by the table below which, though it covers only the cases admitted to one hospital, is typical of the general improvement.

CASES OF MALARIA ADMITTED TO NEW HAVEN HOSPITAL.

1914-1916. Average per year.....	26
1917-1919. Average per year.....	4
1920	4
1921	1
1922	4
1923	9
1924	1
1925	1
1926	0

Of the 14 cases admitted during the years 1921-23, 2 were from Hamden, 2 from West Haven, 2 from the Beaver Swamp region, 1 from near West River, 1 from near Mill River, 4 from the vicinity of the railroad station and 2 from the center of the city. Of the two cases admitted since 1923, one was from Hamden and one from the neighborhood of Edgewood Park (one of the few localities where Anopheles mosquitoes have still been occasionally found in recent years).

3. **Results of 1927 Survey.** During the summer of 1927 the City Health Department had a systematic survey made of the entire city from the standpoint of mosquito breeding

(by Dr. A. F. Dolloff and Mr. R. F. Hart) with the following general results.

The survey of larval breeding places included all of the marshes in, and adjacent to, the city and about one half of the yards and lots, selected as typical of the rest. In addition night catches of adult mosquitoes were made in various parts of the city and the particular species identified.

The collection of adult mosquitoes showed salt marsh species to be predominant in June and early July while later catches showed an excess of fresh water types. The unusually rainy season was no doubt, however, in part responsible for this latter result. Anopheles mosquitoes were found but once in the night catches as compared with 76 salt marsh forms and 128 fresh water forms other than Anopheles. Fourteen locations were found, however, in which Anopheles species were either breeding or were caught near the breeding place but in only four instances was **Anopheles quadrimaculatus** (the chief malaria carrier) identified.

In considering the general problem of mosquito breeding in New Haven it is obvious that there are three primary areas to be considered,—the low lands adjoining the beds of the three streams which intersect the town, West River, Mill River and the Quinnipiac. In addition there are well-defined marshy areas on the east shore of the harbor.

Mosquito breeding in the Beaver Swamp area (tributary to West River),—once a prolific source of malarial mosquitoes,—has been practically abolished by drainage operations and great improvements have been made in the Quinnipiac and in the east shore salt marsh areas. The chief marshlands breeding mosquitoes in 1927 were as follows (proceeding in each area from south to north).

	West River Area	Mill River Area	Quinnipiac Area	East Shore
Salt marshes	Congress and Kimberly Avenues		West of Little River Marsh, near R. R. yards	Fort Hale Park, south east of women's bath house.[1]
Fresh water marshes	South of Kimberly Ave. East of Boulevard	Orange and William Streets		Light House Point Park between road and car line.
Between Washington Ave. Boulevard dump and railroad				Morris Cove marsh
North of Congress Ave., west of West River				Borders of stream crossing Forbes Ave. near peat meadow and meadow itself
Foot of Boulevard dump, between Congress Ave. and Chapel St., East shore, West River				Forbes Ave. and Main St. east of Townsend Ave.
South of Derby Ave., west of West River				Between Ashland and Irvington Sts. and Townsend Ave.
Between Mead St. and Boulevard, south of Derby Ave. school				
Edgewood Park between Whalley and Edgewood Avenue				
Pond bed, south of Whalley Ave. near Wright St. south of Amity Road				

[1]This area was drained last fall subsequent to the 1927 survey.

It is obvious from the above analysis that the marshland mosquito breeding problems of New Haven are essen-

tially three in number, the large salt marsh area in the Quinnipiac valley, west of Little River, a series of small fresh and salt water breeding places along the West River valley and a series of rather more important breeding places on the east shore of the harbor.

In addition to these marshy and swampy areas there are in many sections small local depressions which are listed in Dr. Dolloff's report and which should be filled or treated with larvicides during the breeding season. Furthermore, much breeding takes place in tubs, barrels, cans and other receptacles in back yards capable of holding standing water. Out of 370 blocks carefully inspected 193 revealed breeding places of this kind. Ponds were found to be of little significance on account of the fact that most of them contain fish which destroy the larvae.

4. **The Present Drainage Program.** The Chamber of Commerce of New Haven early in 1927 organized a Committee on Mosquito Elimination which, on the basis of surveys made by the Connecticut Agricultural Experiment Station, has formulated a comprehensive program for the elimination of the chief remaining salt marsh mosquito-breeding areas in and around New Haven. This program includes three major projects, as follows, covering all the important salt marsh areas not drained in 1912-16.

(1.) Quinnipiac Marsh. Ditching of 310 acres in North Haven and of 571 acres in Hamden and the construction of a tide gate at Middletown Avenue.

(2.) Morris Creek and East Haven. Dredging of Morris Creek, ditching of 514 acres in East Haven and 75 acres in New Haven.

(3.) Branford. Ditching of 317 acres.

The cost of this program was originally estimated at $25,000 but will, it is now believed, amount to $40,000. The city of New Haven and the towns of East Haven and Branford have made appropriations for this purpose and the Chamber has raised a considerable sum by private subscription so that the completion of the bulk of this work seems reasonably assured. It will be carried out in 1928 under the direction of Dr. W. E. Britton, State Entomologist and Mr. R. C. Botsford, Deputy in Charge of Mosquito Elimination of the Connecticut Experiment Station.

5. **Summary and Recommendations.** New Haven has made encouraging progress during the past ten years in the solution of the unusually serious mosquito problem, created by the fact that the city is transversed by three valleys of low-lying land peculiarly liable to the accumulation of stagnant water. The breeding of Anopheles mosquitoes has been reduced to so low a level that malaria has now ceased to be endemic in New Haven as it was up to 1920. With the completion of the admirable program of the Chamber of Commerce the chief sources of mosquito breeding adjacent to the city will be eliminated.

It must be pointed out, however, that even when all this is accomplished two more things remain to be done.

In the first place the salt marsh areas to be drained under the Chamber of Commerce program must be constantly supervised and the ditches kept clear. The growth of grasses and weeds which obstruct the flow of water soon cause a ditch to be worse than useless, since it itself then becomes a prolific breeding place. It is the duty of the State under the law to maintain all accepted drainage projects but it is essential that the Agricultural Experiment Station should be provided with adequate funds to do this work.

Furthermore the completion of all possible salt marsh drainage operations (with which, alone, the Chamber of Commerce program deals) will still leave the problem of breeding in fresh water swamps, in temporary depressions of land and in miscellaneous receptacles untouched. When it is realized that the 1927 survey located 15 important fresh water swamps breeding mosquitoes within the city and revealed mosquito breeding receptacles in 193 out of 370 city blocks inspected, or more than 50 per cent, one may gain some idea of the magnitude of the problem.

The law is clear on this point. A state statute declares "any accumulation of water in which mosquitoes are breeding" to be a public nuisance and makes it the duty of the Health Officer to cause such accumulation of water "to be abolished, screened or treated in such manner as to prevent the breeding of mosquitoes." The actual expense of dealing with the breeding places found in the course of the Dolloff survey either by draining, filling or treatment by larvicides would be small; but results cannot be attained without the provision of special inspectors to see that the work is performed, unless the present inspectors of the department can be freed from a part of their present duties as suggested in a later chapter. If these fresh breeding places are not cared for, the elimination of the salt marsh breeding places will only arouse hopes which are doomed to disappointment since, as we have seen the fresh water mosquitoes were,—last summer at least,—far more numerous in the city than the salt marsh varieties.

We would therefore urge, in order that the admirable Chamber of Commerce campaign may produce its full results as

Recommendation 12. That the representatives of the City of New Haven in the State Legislature be asked to

use their influence for securing adequate funds for the Connecticut Agricultural Experiment Station, in order that the salt marsh drainage projects in the vicinity of New Haven may be maintained in effective operation.

Recommendation 13. That the Health Department should be given each year an appropriation for the employment during the summer months of special inspectors to control mosquito breeding in fresh water swamps, yards and lots throughout the city,—unless the present staff can be freed of certain routine duties, as discussed in a later chapter, so that they can themselves undertake the task.

Chapter VII.

THE ORGANIZATION AND BUDGET OF THE CITY HEALTH DEPARTMENT.

1. **The Place of the Health Department in the City Government.** The city and town of New Haven is governed under a charter which provides for the election every alternate year of a Mayor, Controller, Treasurer, City Clerk, Town Clerk, Collector of Taxes, City Sheriff, Registrar of Vital Statistics, two Registrars of Voters, and one alderman from each ward. The Corporation Counsel, Police Commissioners, Fire Commissioners and Chief, Director of Public Works, three Park Commissioners, members of the Board of Health, Board of Education, and Board of Charities and Correction, and certain other executive officers are appointed by the Mayor. The municipal budget is framed and all bills against the city approved by a Board of Finance composed of the Mayor, the Controller, one alderman, elected by the Board of Aldermen, and six citizens appointed by the Mayor.

The city and town includes thirty-three wards, one of which, the thirty-second is in the town of New Haven but not in the city. This ward provides its own police and fire protection. The city furnishes this ward with streets, schools and some other improvements. Only a portion of the taxes levied in the thirty-second ward go to the city, the balance being retained by the ward for its own expenditures.

Section 93 of the Charter as amended in 1920 provides that "There shall be a Department of Public Health in said city, under the care and control of a Board of Health,

consisting of seven members, one of whom shall be the mayor and two of whom shall be physicians. Said Board shall choose a President, who shall be at the head of said Department. All members of said Board shall be residents of said city and shall serve without compensation." The members of the Board are appointed annually to serve for a term of five years. The Board is given ample power under Section 94 of the Charter and it employs the health officer and his staff and fixes their compensation, subject to the approval of the Board of Finance.

The members of the Board of Health for the year 1927 have been as follows; (the date of expiration of the term of each member follows the name); His Honor Mayor John B. Tower, Ex Officio; Mrs. Edward G. Buckland (May 1, 1930), President, William R. Bailey (Feb. 1, 1930), Charles J. Bartlett, M.D. (Feb. 1, 1932), William J. Butler, (Feb. 1, 1928), S. J. Goldberg, M.D. (Feb. 1, 1931), A. J. Mendillo, M.D. (Feb. 1, 1929).

The Chairman of the Board, Mrs. Buckland, and her colleagues have rendered to the city a high quality of voluntary service and Mayor Tower has displayed the keenest and most forward-looking interest in the health program of the city.

It will be noted that New Haven (in conflict with the best trends in municipal government) still has a rather long list of elected officers, including several functionaries whose duties are of a routine administrative nature which should be wholly free from political considerations. The only point in the general plan of organization with which we are here concerned is the maintenance of a separate office of a Registrar of Vital Statistics entirely distinct from the Department of Health. This office has two clerks in addition to the Registrar himself and had in 1926 a budget of $9100.

The registration of vital statistics by an independent lay department of this kind is an unsound procedure for two reasons. In the first place the recording and analysis of mortality returns is a highly technical matter, involving medical judgment as to the significance of assigned causes of death; and in the second place, since the actual use of such statistics is almost wholly in the hands of the Department of Health, it makes for efficiency to have the data collected and analyzed by the experts who are to use them. In the other large cities of Connecticut the transfer of this function of vital statistics registration to the Department of Health has already been accomplished. It would contribute materially, both to economy and to efficiency, if this were done in New Haven.

2. **Powers and Functions of the Board of Health.** The Board of Health, according to the Charter (Sec. 94) has "all the jurisdiction, power, privileges and duties now by law vested in and imposed upon the town health officers in this state in their respective towns." The town health officers thus referred to in the words of Sec. 2521, Chapter 151 of the General Statutes of the State "Shall have and exercise all the powers necessary and proper for preserving the public health and preventing the spread of diseases." The general powers conferred are, therefore, ample. In addition, the Board of Health, under the Charter, is also specifically empowered to regulate the sale of milk and other food stuffs (the power to license milk dealers being definitely specified) and to abate nuisances.

Furthermore,—and most important of all,—it is provided that "said board may, from time to time, make such by-laws, rules, regulations and orders as in its judgment the preservation of the public health shall require, to

be enforced in the same manner as city ordinances." It is provided of course that the by-laws, rules, regulations and orders shall be "not inconsistent with the constitution or laws of this state or of the United States or with the charter or ordinances of said city;" and that no penalty of more than one hundred dollars shall be imposed for a single violation of any by-law.

All this is in accord with the soundest and best practice. The provision in Section 95 that the Board of Health shall appoint and prescribe the duties of all employees of the Department is, on the other hand, counter to what authorities on municipal health administration generally consider advisable. Experience has shown that it is usually sounder in a large city for the Board of Health to outline broad policies and formulate the sanitary code but to leave administrative details of appointments and duties of individual employees to the Health Officer, in accordance with the sound principle of concentrating administrative power and responsibility in the hands of a single executive. The present Health Officer, however, feels that the system now in force works well and serves as a real protection to him in the exercise of his duties. We therefore refrain from any recommendation on this point, although as the city grows a change in this regard will some day prove desirable.

3. **The Sanitary Code.** While, as we have seen, the Board of Health has ample power to make "such by-laws, rules, regulations and orders as in its judgment the preservation of the public health shall require," the situation is somewhat complicated by the fact that the Aldermen have from time to time passed ordinances dealing with health matters which of course supersede the regulations of the Board. Certain of these ordinances are distinctly

objectionable. Section 345 renders inoperative the control of shellfish taken from the harbor. Section 383 gives a very incomplete list of contagious diseases. Section 384, if enforced, would place an unjustifiable burden upon physicians. Section 392 and 393 are in part archaic. Section 421 is absurd and unreasonable. Sections 429 and 430 are undesirable because they permit and encourage the discharge of fecal matter into the harbor.

The problem of formulating the sanitary regulations of a city is such a complex one that it can only be solved wisely by delegating the duty to a small expert body. It is precisely for this purpose that the Board of Health has been given the power to make and, from time to time revise, regulations for the preservation of the public health. The Board of Aldermen could wisely leave this duty to the Board of Health except in very exceptional instances.

There has been no published collection of the ordinances and regulations dealing with health in New Haven since 1916; many of the ordinances now in force are objectionable or unnecessary and the regulations of the Board of Health are incomplete. It seems to us of the first importance that the Board of Health should prepare a complete and up-to-date Sanitary Code in the form of Board of Health Regulations and that the Board of Aldermen should then be urged to repeal all archaic ordinances inconsistent therewith. The new code should not itself be enacted in the form of an ordinance since technical changes will from time to time be necessary and can be made much more easily and scientifically in Board of Health regulations than in aldermanic ordinances.

The Working Rules of the Department, last issued in 1919, are also in urgent need of revision.

4. **The Internal Organization of the Health Department.** The internal organization of the Health Department is now on an admirable basis, in marked contrast with the situation ten years ago. The Health Officer has under his direction seven distinct bureaus, of Administration, of Communicable Diseases, of Tuberculosis, of Laboratories, of Nursing, of Child Hygiene and of Inspection. The first is of course under the Health Officer himself. The Bureaus of Communicable Disease Control, Tuberculosis and Laboratories have full time directors, while Child Hygiene and Inspection have not. The Bureau of Communicable Disease Control has two divisions, dealing respectively with Venereal Disease Control and Epidemiology. The plan as far as it goes is eminently sound and the creation of a Bureau of Tuberculosis,—the most recent addition to the Department,—is a step of the first importance. In the future it will probably be desirable to provide for a separate Bureau of Venereal Diseases with a full-time head and for a full-time head for the Bureau of Child Hygiene; but these problems will be discussed in subsequent chapters.

The staff of the department includes 5 physicians (besides the Health Officer), 23 nurses, 4 dentists, 5 dental hygienists, 3 laboratory workers, 11 inspectors and 5 clerks and stenographers.

The correlations developed between the Health Department and various voluntary agencies in the community constitute a peculiarly admirable feature of the present program. The success of a health officer can be gauged in no better way than by his readiness to welcome, and his effectiveness in securing, the cooperation of other health agencies. It is gratifying to note that the Department carries out important phases of its work through the

medium of the Visiting Nurse Association; that the Health Officer is a member of the Health Division of the Community Chest and of the Board of Directors of the Visiting Nurse Association and has an appointment on the staff of the Department of Public Health of Yale University; that the Public Health Committee of the New Haven Medical Society is frequently consulted and serves in essence as an advisory medical board to the Health Department. The work in Child Hygiene has the advantage of the counsel of a School Health Committee. The Bureau of Tuberculosis has a special advisory board and utilizes to the full not only the resources of the Visiting Nurse Association (which handles all its tuberculosis nursing) but also those of the William Wirt Winchester Fund for clinical care of cases and those of the Employees Tuberculosis Relief Association for material relief. The isolation of communicable diseases is cared for on a basis highly advantageous to the city in the Isolation Pavilion of the New Haven Hospital. Through these forms of cooperation the Health Department enormously expands the field of its usefulness to the public.

5. **Personnel.** Forms of organization are far less important than personality in every phase of human activity; and it is here that New Haven is particularly fortunate. For nearly thirty-five years it enjoyed the services as Health Officer of Dr. Frank W. Wright, a wise and conscientious and loveable public servant, who did much for the Department and whose personality is remembered with affectionate appreciation by all who knew him. On Dr. Wright's death in 1923, the present incumbent, Dr. John L. Rice was appointed to take his place. Dr. Rice was admirably prepared for this post by extensive experience with the Rockefeller Foundation and in state, county and

city administrative health work in the United States, and his achievements during the past four years have been such as to place him in the fore-front among the health officers of the United States. The reorganization of the system of milk control, the development of what is probably the best municipal system of tuberculosis work in the United States and the remarkably successful campaign against diphtheria have been, so far, the outstanding events of his administration. New Haven is extraordinarily fortunate in its Health Officer.

In practice, then, New Haven has selected its health officers well and has wisely retained them in office. It should be pointed out, however, that the Charter is woefully deficient in providing the city with adequate safeguards in this respect. It contains no provision either as to the qualifications of the Health Officer or his tenure of office. The Board of Health could, subject to the standards of the Civil Service Commission, appoint any type of individual whatever as Health Officer and change him at any time it desired. It should certainly be provided in the Charter that the health officer of the city should be a physician with special training or experience in the field of public health administration and that, once appointed, he should hold office during good behavior.

Dr. D. M. Lewis, Director of the Bureau of Communicable Disease Control and Miss Margaret J. Barrett, Director of the Division of Nursing are executives of long experience and proved capacity. Mr. P. E. Bransfield, Director of Laboratories was appointed about a year ago as a result of an exacting Civil Service examination and is admirably qualified for his position. Dr. W. B. Soper, Director of the Bureau of Tuberculosis in 1926-1927 and Dr. Herbert Edwards who has recently taken his place are now

among the leading experts in their field in the country. The staff of inspectors and nurses attached to the Department are experienced and loyal.

6. **Physical Facilities of the Health Department.** The New Haven Health Department has for years suffered greatly for the lack of the housing facilities necessary for efficient service. Its headquarters force has been jammed into one room in the City Hall and its laboratories have been located in an attic of the Police Building. During 1926, however, Dr. Rice was provided with reasonably adequate quarters in the City Hall Annex and in 1927 the laboratory was moved into a building of its own at 212 Orange Street in the rear of the City Hall. The headquarters include five private offices and a large room suitable for staff meetings. In general, the facilities now provided seem quite satisfactory for the immediate future.

7. **The Health Department Budget.** The Health Department budget allotted for the year 1926 was $116,963.33 (original budget $114,255 plus a supplementary appropriation of $2708.33). Of this sum $2051 was transferred to the Department of Public Works for repairs incident to the moving of the department into its new quarters and $1616.63 was turned back into the City Treasury as an unexpended balance, leaving $113,295.70 as actual running expenses. This was subdivided as follows: for Administration, $8334.42; for Communicable Disease control, $19,767.79; for Venereal Disease control, $5412.40; for Tuberculosis, $4927.26; for School Hygiene, $21,302.31; for Public Health Nursing, $25,309.79; for Public Health Laboratory, $6675.05; for Inspection, $21,566.68.

In addition to this fundamental allotment there were assigned from other municipal budgets to the use of the

Health Department $1922 for the printing of the Monthly Bulletin and Annual Report and $3593 for automobile service.

In the table below the charges for automobile service have been allocated and the cost of the Inspection Division subdivided as accurately as possible between the three items of milk control, food control and sanitation. The figures are expressed on a per capita basis to compare with the standard budget recently suggested in the American Public Health Association manual on Community Health Organization.

PER CAPITA HEALTH DEPARTMENT BUDGET ANALYZED BY DIVISIONS AND COMPARED WITH STANDARD.

Division	*New Haven Budget*	*Standard Budget*
Administration	4.8	13.5
Public Health Education	1.1	4.2
Vital Statistics*	6.3	4.5
Epidemiology	6.6	8.8
Hospitalization of Communicable Disease	3.0	20.0
Tuberculosis	3.0	7.9
Venereal Disease	3.0	8.9
Maternity and Infant Hygiene		10.5
School Hygiene	11.7	22.5
Sanitation	5.5	9.5
Milk Control	5.1	5.5
Food Control	2.4	5.1
Laboratories	3.7	10.0
Nursing	14.2	86.2
Total	70.4	217.1

In interpreting this table it must be remembered that the Standard Budget includes all health appropriations,

* Under Registrar of Vital Statistics. Portion of budget ($8947) chargeable to ordinary functions of Vital Statistical Bureau, plus $2500., the estimated cost of vital statistics tabulation in the Health Department.

from private as well as from public sources. Thus, the maternity and infant hygiene work of New Haven is largely performed by the Visiting Nurse Association and the New Haven Dispensary, a considerable part of the Tuberculosis work by the William Wirt Winchester Fund, the Employees Tuberculosis Relief Association and the New Haven Dispensary, a considerable part of the Venereal Disease work by the New Haven Dispensary and two-thirds of the public health nursing by the Visiting Nurse Association.

If we omit these four items and consider only the other ten, in which public funds are not here supplemented by voluntary agencies we find that New Haven is spending but 50 cents per capita as compared with a standard of $1.04. Vital Statistics receives somewhat more than its standard quota. All other items receive less, the most marked discrepancies being noted in the hospitalization of communicable disease about one seventh of the standard, in the Laboratory and Public Health Education and Administration budgets which are but little over one-third of the standard, followed by the budgets for School Hygiene, Food Inspection and Sanitation which are about half the standard.

Are these low budgets a cause for congratulation or the reverse? Do they indicate wise economy or short-sighted parsimony? The answer differs in the particular instance. In the case of activities such as Food Inspection and Sanitation which are concerned more with public decency than with positive health promotion the low cost is certainly a cause for congratulation. The economy in hospital care of communicable disease will be discussed in a succeeding chapter. In the case of Public Health Education, Laboratory Service and School Hygiene, on the other hand, every dollar spent will bring a large return in the pro-

motion of health and efficiency. We are only just beginning to learn how much can profitably be expended for such activities and all communities are increasing their appropriations as the possibilities are realized. Along these and other lines, as we shall point out in later chapters, it would be eminently wise to provide for substantial increases in the health department appropriation.

The fundamental health department budget for 1926 was, as we have seen, $114,255. For 1927 it was increased to $124,921.66 and for 1928 to $139,050 (plus an additional $6750 for mosquito elimination). The $25,000 increase between 1926 and 1928, is approximately distributed as follows: Administrative, $2000; Tuberculosis, $5000; Venereal Disease, $1000; Laboratories, $3000; Child Hygiene, $5000; Nursing, $6000; Inspection, $3000. It is encouraging to note that the percentage of increase in the budget between 1926 and 1928 is about 22 per cent while the population was increasing 3 to 4 per cent. Thus it appears that the city is gradually making up for its earlier parsimony and is gradually building up adequate machinery for health protection. It will be necessary, however, to continue such increases for some years more in order to ensure the full service which a modern municipality owes to its citizens.

It is of interest to note that the 1928 budget allotments for certain specific purposes work out as follows on a per capita basis.

PER CAPITA APPROPRIATION, 1928.

All Departments	$45.83
Education Department	16.79
Police Department	4.74
Fire Department	4.41
Public Works	4.24
Charities and Corrections	1.36
Department of Lamps	.85
Department of Parks	.80
Department of Public Health	.77

Street lights and parks are important elements in municipal life; but the protection of the public health should surely rank above them, at least on a level with Charities and Corrections if not with protection against fire and against lawlessness.

There is one minor phase of the city's budget system which deserves attention from the standpoint of municipal bookkeeping. The appropriation of $6750 for mosquito elimination is listed in the 1928 budget under the Department of Health and the appropriation of $5000 for services rendered by the Visiting Nurse Association is listed under the Sundries Account; but neither of these appropriations was made and neither is controlled by the Department of Health. Both items represent entirely wise expenditures but both are appropriations for public health purposes and should be handled through the medium of the Department.

8. **Conclusions and Recommendations.** In general, the organization and administration of the Health Department seems to be admirable. In order that it may always remain so, it would be desirable to safeguard the qualifications and tenure of office of the Health Officer by Charter Amendment, though the need is not at present immediate. The most serious defect in the present plan of organization is the separation of the registration of vital statistics from the Health Department where it properly belongs. We shall point out in subsequent chapters lines of urgently important investigation which could easily be performed in this bureau without additional cost if it were properly organized under medical direction.

It seems essential for the most efficient sanitary administration that the Sanitary Code and Working Rules of the

Health Department should be revised and brought up to date and that obsolete and conflicting city ordinances should be repealed.

Finally, the Budget of the Department should be substantially increased as indicated in subsequent chapters particularly along the lines of child hygiene, venereal disease control and public health education and that all city appropriations for health purposes should be routed through the Health Department.

Recommendation 14. That the City Charter should be amended to provide that the Health Officer must be a physician with special training or experience in public health administration and that he should hold office during good behavior.

Recommendation 15. That the City Charter should be so amended as to transfer the work of registration of vital statistics to the Department of Health.

Recommendation 16. That the Board of Health draft a new and comprehensive Sanitary Code and revise its Working Rules; and that all obsolete and conflicting City ordinances dealing with health problems be repealed.

Recommendation 17. That the budget of the Health Department be increased by approximately $20,000 to provide for expansions along the lines of child hygiene, venereal disease control and public health education, as indicated in later chapters.

Recommendation 18. That all city appropriations for health purposes including grants made to voluntary agencies be made through and with the approval of the Board of Health.

Chapter VIII.

THE WORK OF OTHER OFFICIAL AND UNOFFICIAL AGENCIES IN THE HEALTH FIELD.

1. **Municipal Agencies.** Aside from the Department of Health and the Registration of Vital Statistics which have already been discussed, there are two other branches of the municipal government,—the Department of Education and the Department of Charities,—which play a large part in the community health program.

The health work carried on in the schools will be discussed in some detail in a later chapter; and it is here only necessary to point out that the Division of Physical Education under this department provides for the following services:

Physical training (under Mr. Schnelle), with special emphasis on games and sports.

Correctional work which includes the operation of 6 open-air rooms, 15 nutrition classes, (under Miss Warrant and two assistants), a class for crippled children and a sight conservation class.

A Division on Mental Defectives (under Miss Cutts) provides for mental tests and mental adjustment work in cooperation with the Yale Psycho-clinic.

The total cost of these health activities of the Department of Education is estimated by Superintendent Beede at $18,050.

The Department of Charities makes two appropriations for health purposes,—for the payment of hospital charges for indigent patients, and for the payment of physicians

for home treatment of indigent patients. Under the first heading it spent in 1926, $58,570.49 for the institutional care of mental disease and $55,879.96 for the care of other types of illness. The first item was of course divided between the state institutions at Middletown, Norwich and Mansfield. The latter was subdivided as follows:

New Haven Hospital	$25,997.81
Grace Hospital	13,821.22
State Tuberculosis Sanatoria	9,024.73
St. Raphael's Hospital	3,686.03
Others	3,350.17
	$55,879.96

For salaries of physicians in 1926 the Department paid $1,600, for which 636 home calls were made.

2. **Voluntary Agencies Devoted Wholly or Primarily to Health Promotion and Care of Illness.** The largest single agency devoted to health promotion, next to the city Department of Health, is the Visiting Nurse Association which carries on a complete generalized service in the homes, including education in personal hygiene as well as the care of illness. It had in 1926 a total budget of $111,552 of which the Community Chest contributed $67,680 and the city, $5,000.

The three hospitals had the following budgets for 1926: New Haven Hospital, $615,417 (including $36,000 from the Chest), Grace Hospital, $442,000 (including $22,500 from the Chest) and the Hospital of St. Raphael, $206,457 (including $7,639 from the Chest).

The New Haven Dispensary does practically all the outpatient clinic service for the city, at a cost in 1926 of $60,025 of which the Chest contributed $18,000.

The Employees Tuberculosis Relief Association, which supplies material relief (chiefly the cost of sanatorium care) for industrial workers suffering from tuberculosis had in 1926 a budget of $15,000.

The New Haven Branch of the Connecticut Society for Mental Hygiene and the Yale Psycho-Clinic provide clinic care for all types of mental disease and mental defect as well as for minor behavior problems. The Chest appropriated $7,200 for the Mental Hygiene Society in 1926, while the cost of the Yale Clinic is borne by the University.

The William Wirt Winchester Hospital forms an important element in the city health program,—not only by the care of cases of tuberculosis but also by its support of the Day Camp.

The Crippled Children's Aid Society carries out a special program for orthopedic cases with a budget in 1926 of $16,617 of which the Chest contributed $13,500.

Finally the Queen's Daughters provide home care,—largely for chronic and convalescent cases,—at a cost in 1926 of $4,515 of which the Chest contributed $3,420.

3. **Voluntary Agencies Providing Health Service as a Minor Phase of their General Activities.** In addition to the organizations listed above, mention must be made of a group of voluntary agencies which are not primarily health agencies but which do include certain particular health services in their general program. The chief organizations of this type are as follows:

A. The Children's Community Center, which provides convalescent care for orthopedic, cardiac and similar cases.

B. The Organized Charities Association, which is responsible for the management of the Register Fresh Air

Fund Cottage at Branford, providing summer outings for children.

C. Woman's Seamen's Friend Society, which operates an infants' hospital in summer at the Snug Harbor.

D. The New Haven Boys' Club, the Girl Scouts, the Campfire Girls and the Boy Scouts, all of which organizations provide in greater or less degree for physical education and medical examinations.

E. The American Red Cross, which maintains classes in home nursing, first aid and nutrition.

F. The Y. M. C. A., the Y. W. C. A., the Y. M. H. A. and the Y. W. H. A., all of which organizations have health committees and render more or less service to their members in the way of health education and medical examination.

4. **Summary of Public and Private Appropriations for Health Promotion and Care of Illness.** The table below is of some interest as indicating the contributions made from the City Treasury and from the Community Chest toward the support of agencies for the promotion of health and for the care of the sick. It will be noted that about 40 per cent of the total is contributed by the Chest while in other cities the ratio of the Chest contributions to the total sum expended for such purposes is commonly between one quarter and one third.

MAJOR EXPENDITURES FOR HEALTH PROMOTION AND CARE OF ILLNESS, BY THE CITY AND THE COMMUNITY CHEST. 1926.

Sources of Funds.	*Municipal Appropriation.*	*Community Chest.*
Department of Health	$118,811	
Department of Education	18,050	
Department of Charities	70,501*	
Registrar of Vital Statistics	8,947	
Visiting Nurse Association	5,000	$67,680
New Haven Hospital	25,998	36,000
Grace Hospital	13,821	22,500
St. Raphael's Hospital	3,686	7,639
New Haven Dispensary		18,000
Children's Community Center	2,044	
Society for Mental Hygiene		7,200
Crippled Children's Aid Society		13,500
Queen's Daughters		3,420
Total	$266,818	$175,939

* Appropriation for state hospitals for mental disease and defects, state tuberculosis sanatoria, etc. The appropriation from the city to the three New Haven hospitals and the Community Center are also made through the Department of Charities.

Chapter IX.

GENERAL SANITATION.

1. **Legal Provisions.** The Board of Health, as we have seen, is endowed by Charter with quasi-legislative power to make such rules and regulations as are necessary to preserve the public health. The principal legal provisions relating to environmental sanitation concern the abatement of nuisances, sanitary conditions in tenement, lodging and boarding houses, and control of mosquito breeding places. The ordinances relating to nuisances are primarily designed to keep the streets and yards free of garbage, refuse, waste, dead animals, and ill-smelling materials. They also regulate the conditions for erection of privies, cesspools, vaults, etc., in such manner as to prevent them from becoming obnoxious and injurious to public health.

The tenement house regulations and the systems of inspection by the Building and Fire Departments through which they are enforced and the control of mosquito breeding places have been discussed in preceding chapters. We are here concerned with the work of the Health Department in the control of general sanitary conditions.

The Ordinances dealing with general sanitation are to be found in Chapter XVIII of the City Ordinances. They are incomplete and largely archaic. The State Sanitary Code in Regulations 100 to 108 has a much better system of regulations (which of course are applicable in New Haven). It would be wise in drafting a new sanitary code for the city as recommended in Chapter VII to include specifically these state regulations, to add to them a good general definition of a public nuisance and to repeal most of the present city ordinances dealing with this subject.

All of the existing regulations and orders are enforced by the Health Department with the aid, when necessary, of the City Attorney and courts. However, it is only as a last resort that legal proceedings are necessary. Usually a notice or warning is sufficient to secure abatement of the nuisance in question. If the written notice fails to secure action it is followed by a personal interview and only when this measure too has failed is the case referred to the City Attorney.

2. **Sanitary Inspection and Results.** The ordinances relating to environmental sanitation are made effective through the activity of five general inspectors who are under the direct supervision of the Health Officer. Their salaries range from $1,700 to $2,200. There is no other personnel, and no expenditure except that for transportation. The per capita cost of the service (5.5 cents) is as we have seen very low since the standard program allows 9.5 cents for this purpose. Each inspector is assigned to a separate section of the city which he is required to cover as thoroughly as possible. Besides attending to all complaints received, he also makes systematic house to house sanitary inspections. Certain inspectors have the additional duty of supervising barber shops, theatres and public buildings. The varied scope of the inspectors' duties is well illustrated by the following quotations from their report for 1926. "We have placarded factories and public buildings and other places, issued practically all milk licenses, supervised all fish cart peddlers day and night as to their methods and cleanliness. * * * Theatres were visited and found to be properly ventilated and in addition we wish to say that it is gratifying to know how courteous and obliging the proprietors of these institutions were in placing on their screens our slides explaining the value of the Schick test.

* * * Nuisances of all descriptions have confronted us such as offensive fires, smoke nuisances, crowing roosters, noises by animals, manure piles, garbage collections, stagnant pools, overflowing cesspools, offensive vaults, bad yards and lots, thoroughfare conditions and many others. Of course there are many of these that do not deal with our department but nevertheless we reported them to the proper bureaus. During the summer months we have given close supervision to the covering of food stuffs against contamination. * * * We have tendered considerable help in getting parents to allow their children, especially those of pre-school age, to receive the Schick test and be vaccinated. We have found cases where financial and medical attention were needed and have referred them to the proper agencies. We have tried to cooperate in every way with our co-workers in carrying out the obligations of our department and to further the healthful conditions of our city."

The ordinary nuisances controlled include those conditions and activities which are immediately or potentially dangerous to civic health through the furtherance of contagion or which are offensive to public decency by reason of appearance or odor. Full and accurate records are kept of all inspections performed and orders issued. The work accomplished in 1926 is indicated below:

INSPECTIONS.

Yard	7,831
House	3,675
Barber shop	554
Others	2,898
Reinspections	3,967
Total	18,925

The number of nuisances found was 2,220 and all were abated—with only 57 cases referred to the City Attorney for legal action. The great majority of nuisances found are discovered by the staff on their routine house to house inspections, rather than as a result of complaints—which is as it should be.

Since the Appraisal Form calls only for 5,460 inspections against nearly 19,000 actually made and for 80 per cent of nuisances abated against 100 per cent actually secured, New Haven receives a full score on the 20 points allotted for this activity.

The following scores were reported as a result of the inspection of barber shops in 1926.

BARBER SHOP SCORES. 1926.

Score.	*Number of shops.*	*Per cent of shops.*
90-100	95	42
80-89	106	47
70-79	22	10
Under 70	2	1
Total	225	100

Twenty-seven per cent of the shops scored better than in 1925, twenty-one per cent less well.

3. **Control of Vaults and Cesspools.** Among the various types of nuisances, many are of merely esthetic significance while others have a direct and important bearing upon the public health. Among the latter those nuisances which are associated with the exposure of human excrement and those which favor the breeding of flies, mosquitoes and rats are the most significant.

The control of privies and cesspools is therefore a sanitary question of the first importance, and this is still a real problem in certain sections of New Haven. As

nearly as the Health Department inspectors can estimate, there are some 1,800 premises still unconnected with the public sewers, of which 1,400 are in the Fair Haven section and 300 in Westville. Of these 1,800 unsewered premises, 1,500 have cesspools and 300 privy vaults.

There is no city regulation requiring the fly-proofing of privies but the State Sanitary Code requires (Reg. 103, Sec. d) that "Every privy vault, cesspool or toilet shall be kept in a clean and sanitary condition at all times and must be so constructed and maintained as to prevent the escape of odors and to exclude animals, poultry and flies." The Health Department inspectors estimate that 85 per cent of the privies in New Haven fulfill this requirement but no exact records on the point are available.

The Appraisal Form has 40 points allotted for sewerage, 30 for the per cent of dwellings connected with street sewers and 10 for per cent of privies effectively fly-proofed. On the first item New Haven may be given 25 points (corresponding to 95 per cent of its dwellings sewer connected) and on the second item 9 points, 34 in all.

The extension of sewers in Fair Haven is the main desideratum in this connection .

4. **Plumbing Inspections.** The inspection of plumbing is properly conducted by the Department of Building Inspection rather than by the Health Department. The Department of Health is empowered by the ordinances relating to tenements to order the repair of defective plumbing only when there is a danger to health involved. Plumbing defective from any other standpoint is corrected by order of the Bureau of Building Inspection.

5. **Disposal of Stable Manure.** The disposal of stable manure, which is a problem of real sanitary significance in

consequence of its relation to fly-breeding, is under the control of the Department of Health. The legal provision relating to this is as follows:

"No person shall place, leave or suffer to remain upon any premises in New Haven any stable manure (except for fertilizing purposes)—unless same is enclosed in a tight box, pit or other receptacle, which shall be kept closely covered so as to exclude all flies at all times except when said manure or refuse matter is being placed therein or removed therefrom. During the months of May to November it shall be unlawful for any person to allow said stable manure or refuse matter to remain unremoved for a period of over 7 days." The above provisions are reasonably well enforced by the inspectors, and the number of stables present is decreasing rapidly. Ten years ago there were over 3,000 and today there are not over 500.

6. **Street Cleaning.** The cleaning of the city streets is supervised by the Department of Public Works. The Health Department has no control over this service except in so far as it enforces the ordinance which forbids the placing of rubbish and waste in the streets. If a street is so dirty as to be offensive to civic decency the Health Department depends upon the cooperation of the Department of Public Works for betterment of the situation. The methods used in New Haven to keep the streets clean are (1) brooming; (2) sprinkling; (3) washing with meter street flusher; (4) oiling; (5) placing of paper cans at street intersections, public schools and in front of theatres. On the whole, the streets of New Haven are kept fairly clean, which speaks well for the efficiency of the Bureau of Streets and the cleanliness of the community.

7. **Rat Control.** Another specially important problem in the field of sanitation is the control of the rat because of its destructiveness and because of the danger of the spread of bubonic plague by these animals in case that disease should be introduced. It is estimated that the average American city supports about one rat for every human being in its population and that the damage done by one of these rodents amounts to at least half a cent a day. On this basis the rats of New Haven cost the city $329,000 a year. Plague has been from time to time introduced at many American seaports but rarely so far north as New Haven. The problem is therefore primarily an economic one but it might be well worth while as circumstances permit for the Health Department to make a study of the rat infestation of New Haven, its incidence in various sections of the city and the cost of various remedial measures such as trapping and rat-proofing. At present trapping by private rat catchers is the measure resorted to in locations where special rat infestation is known to occur.

8. **Summary and Recommendations.** In general, the control of sanitary conditions in New Haven seems to us economical and efficient. We believe that it would be of distinct advantage however to relieve the sanitary inspectors of the Health Department of the routine control of conditions in yards, streets and vacant lots which are of purely esthetic significance leaving them free to deal more intensively with problems having a fundamental influence upon health. Furthermore we believe it would be in accord with sound principles of administration to relieve the Health Officer of the necessity of direct contact with the individual inspectors and to appoint from the membership of the present inspection staff a chief responsible for the

general direction of the whole Bureau of Inspection. In these respects we venture to repeat recommendations made ten years ago.

Recommendation 19. That the Board of Aldermen take such action as may be necessary to place responsibility for the inspection and control of ordinary nuisances, such as are due to accumulation of rubbish in vacant lots, yards and the like and the investigation of complaints relating thereto, in the hands of the police department so that the inspectors of the health department may devote their attention to the problems of fly and mosquito control, the protection of privy vaults, the improvement of housing conditions and other matters bearing more directly upon health.

Recommendation 20. That a chief of the Bureau of Inspection be appointed (presumably from the present staff) at a salary of $3,000 to coordinate and direct the work of the farm, milk, and general sanitary inspectors.

Recommendation 21. That the Department of Health should devote special attention to the fly-proofing of privies and to the storage of manure in receptacles which are not only covered but provided with tight bottoms; and that as occasion offers, it should make a systematic study of the problem of rat infestation in New Haven with a view to developing a comprehensive program of rat control.

Chapter X.

SUPERVISION OF FOOD SUPPLIES.

1. **Control of Milk Production and Milk Handling.** The administrative control of food supplies includes two major problems,—the supervision of milk supply and the supervision of establishments preparing and selling foods of other kinds.

The proper safeguarding of the milk supply is of course one of the primary essentials of municipal sanitation. On the one hand, milk is so valuable a food that its consumption is a measure of the most important factor of safety in the diet of the community; while on the other hand milk, unless produced under proper conditions and carefully handled thereafter, may play a devastating role in the spread of communicable disease.

Approximately 90,000 quarts of milk are sold daily in New Haven, giving a consumption of one pint per capita, per day. This is a fairly good figure, the general average for the cities of the United States being about 0.8 pint. This milk comes from 800-900 farms in 43 different towns. It is handled by 40-50 dealers and sold from some 900 retail stores.

New Haven has in force a city ordinance which requires the licensing of all milk dealers operating within the city limits (905 such licenses were issued in 1926). The license is contingent on the maintenance of specified standards of sanitary attainment, not only in the city bottling plants and stores but also on the farms where the milk is produced and it is required that all milk sold in the city must either come from tuberculin-tested herds or be pasteurized accord-

ing to the definition of the State Milk Regulations Board (heated to 145° F. and held between 142° and 148° for 30 minutes). After pasteurization all milk must be cooled promptly to a temperature of 50° F. and maintained at or below that temperature until delivered to the consumer. It is required that all bottled milk be plainly marked to show the name of the producer or distributor and the grade. For certified and Grade A milk, state regulations require that the date of production or of pasteurization shall be shown. The state regulations also provide that all milk served in restaurants, hotels and similar places must be served in the original containers as bottled at the plant.

For the purpose of enforcing these regulations and ensuring the safety of this essential food supply the Health Department has two farm inspectors, (J. H. Gibbons and A. H. Meigs) and two city plant inspectors (C. H. Amerman and J. F. O'Dea). While it might seem logical for the city to rely for the supervision of the primary sources of its milk supply upon the inspection service of the State Dairy and Food Commission such a course would be out of the question at present since Commissioner Holt has but nine farm inspectors for the entire state.

The New Haven inspectors visit every farm supplying the city several times a year. In 1926, 3,794 inspections were made of 844 producing farms distributed over 43 towns in the state. The purpose of the inspections is largely educational and advisory in nature; but a score of at least 70 is required of each dairy farm supplying milk to the city. During the year all the farms producing milk for the New Haven market were inspected and scored, with the following results: 626 farms scored from 70 to 79; 196 scored from 80 to 89; 20 scored from 90 to 99; and 2 scored 100 points.

Creameries and milk stations in the city are also regularly inspected, 1,550 inspections having been made during the year in addition to 277 inspections of stores. Special consideration is given during these inspections to methods of sterilization of bottles, cans, and equipment, to the effectiveness of operation of machinery, to refrigeration methods, and to general conditions, as to health and cleanliness. The most important element in the whole system of supervision is the inspection of pasteurizing plants, of which 23 were in operation in 1926. The men assigned to this work (and the same is true of the farm inspectors) are competent and experienced and the entire work of milk inspection is unusually well performed.

2. **Analytical Data as to Quality of Milk Supply.** Of the 90,000 quarts of milk sold daily in New Haven about 88 per cent is pasteurized; the remaining 12 per cent comes from tuberculin-tested herds and one third of this amount (4 per cent of the total) is of certified grade produced under the supervision of the state Milk Regulation Board. While the increased pasteurization of New Haven's milk supply is gratifying, twelve per cent of raw milk is still far too high a figure. It is well that milk should come from tuberculin-tested herds on sanitary farms; but nothing short of pasteurization will guarantee safety. Repeated epidemics due to even the highest grades of raw milk have taught this lesson beyond any peradventure and the recent discovery that poliomyelitis and undulant fever may be caused by raw milk only adds to the force of the demonstration.

Samples of milk are collected regularly from milk plants, wagons, and stores, for laboratory analyses. The results of these analyses are published quarterly in the monthly health bulletin. A tabulation of the average re-

sults for the year 1926, as published in the February, 1927, health bulletin follows:

RESULTS OF LABORATORY EXAMINATIONS OF MILK DURING 1926.

NUMBER AND PER CENT OF MILK DEALERS[1] WITH AVERAGE ANALYSES FALLING IN EACH CLASS.

	Pasteurized Milk.		*Raw Milk.*	
Bacteria per c. c.	*Number.*	*Per cent.*	*Number*	*Per cent.*
Under 10,000	4	14.8	7	29.2
10,000 to 50,000	9	33.3	10	41.7
50,000 to 100,000	6	22.2	3	12.5
Over 100,000	8	29.7	4	16.6
Total	27	100.0	24	100.0

[1] (Approximately 16 samples from each dealer.)

These results show a striking improvement over the situation ten years ago when we found in the summer of 1916 that 89 per cent of a series of 200 samples examined had over 100,000 bacteria per c. c., 62 per cent over 1,000,000 and 30 per cent over 5,000,000. Even during the winter and spring of 1914 (at a cool season), workers in the laboratory of Professor Rettger found 69 per cent of a series of samples over 100,000, 31 per cent over 1,000,000 and 11 per cent over 5,000,000. The progress made as a result of inspection and laboratory control is most encouraging.

The actual situation too is even better than would appear from the table above since the dealers whose milk is still of poor quality are for the most part the smaller ones. The table below gives the annual average for each dealer and shows that the product of those who supply the great bulk of the milk of New Haven is of excellent bacterial quality.

BACTERIAL CONTENT AND BUTTER-FAT CONTENT OF NEW HAVEN'S MILK SUPPLIES.

1926 AVERAGES.

PASTEURIZED MILK.

Dealers.	Quarts per day.	Bacteria per c.c.	Average butter-fat.
Eastern Dairies[1]	18,800	14,000	3.9
Brock-Hall	15,200	8,400	3.9
Smith & Son	13,000	30,000	3.6
Purity	10,700	35,000	3.65
Clark	4,200	120,000	3.75
Cummings	2,540	53,000	3.5
State Dairy	1,600	188,000	3.5
Story	1,340	9,700	3.55
Eastern Dairies Grade A[1]	1,200	4,600	4.1
Beach	1,180	17,000	3.75
Bailey	1,050	9,500	3.6
Smith & Son Grade A	1,000	46,000	3.9
Augur	900	16,000	3.6
Logioco	880	130,000	3.5
Brock-Hall Grade A	800	15,000	4.05
Kempter	540	43,000	3.55
West Haven	530	18,000	3.65
Fanning, R. J. and S. G.	480	140,000	3.4
Ziolkowski	460	79,000	3.45
Spring Valley	450	56,000	3.5
Stent	390	110,000	3.55
Ryskiewicz	380	300,000	3.8
United Dairies	320	74,000	3.55
Purity, Grade A	300	120,000	3.7
Fanning, W. F.	300	96,000	3.35
Barstein	260	230,000	3.7
Clark, Grade A	200	93,000	4.1
Total	79,000		

RAW MILK.

Dealers.	Quarts per day.	Bacteria per c.c.	Average butter-fat.
Nesbit	1,000	7,300	4.5
Clover Leaf	900	21,000	4.45
Fairlea, Nursery	750	5,600	4.2
Fairlea, Family	650	6,500	5.2
Cloudland	520	4,000	5.25
Shepherd, F. J.	510	28,000	5.0
Shepherd, J. J.	400	118,000	3.75
Doolittle	370	35,000	4.0
Rollwood	360	3,200	5.2
Edwards	360	150,000	3.5
Russell	300	24,000	4.55
Sagalou, Family	300	25,000	4.0
Andrew	300	110,000	3.25
Nutmeg, Nursery	250	47,000	4.15
Farlane	250	80,000	5.7
Beach	240	12,000	4.65
Sorensen	220	40,000	3.7
Nutmeg, Family	200	6,100	4.85
Dickinson	200	97,000	4.8
Creamline	180	14,000	6.7
Moran	170	50,000	4.3
Mountain View	120	190,000	3.9
Sagalou, Nursery	100	27,000	4.0
Maple Tree	100	64,000	4.15
Total	8,750		

[1] Pasteurized in final package. (New Haven Dairy.)

It appears from the table that of the 23 supplies of over 500 quarts a day (17 pasteurized, 6 raw) only four averaged over 50,000 bacteria per cubic centimeter. It is the milk of the small dealers which brings up the average on the basis of total samples examined. Of 10 pasteurized supplies amounting to less than 500 quarts per day one falls under the 50,000 mark, and of 18 raw supplies of less than 500 quarts but 10 fall below 50,000 bacteria per c. c. Roughly speaking, 22 per cent of the city's milk supply is pasteurized in the final package (the one entirely ideal type of milk supply) and is of low bacterial count; 53 per cent is milk pasteurized by other methods and of low bacterial count; 14 per cent is pasteurized milk of excessive bacterial count; 9 per cent is raw milk of low bacterial count; and 2 per cent is raw milk of excessive bacterial count.

All of the four recommendations made in the 1916 survey (as to the inauguration of bacteriological examination of milk, its grading and pasteurization) have been adopted by both state and local authorities in recent years; and there are few fields of public health in which New Haven has made more gratifying progress. Conditions should however be even further improved in the future since as will be pointed out the high counts of a dozen small milk dealers are still so high as to lower New Haven's health rating very considerably on the basis of the standard appraisal form.

3. **Appraisal of Milk Control.** A total of 60 points is allotted on the Appraisal Form to milk supply control. If 100 per cent of the supply is pasteurized, 25 points are allowed. As 88 per cent of New Haven's supply is thus treated, a score of 19.3 points is obtained. Dairy farms are inspected semi-annually or oftener, hence the full credit

of 5 points for this activity is assigned. Of the 5 points allotted for control of distributing plants, 4.4 are obtained, the loss of 0.6 being due to the fact that plants are inspected slightly less often than once a week.

No data are available for 1926 to show the per cent of milk samples before pasteurization having a bacterial content in excess of 500,000 per c. c., hence 5 possible points are lost. Likewise 15 points are lost because more than 20 per cent (actually 37 per cent) of the pasteurized samples showed a bacterial content in excess of 50,000 per c. c., the Appraisal Form calling for 20 per cent of samples below this figure for even a minimum score. From data now being accumulated on this subject, it is anticipated that an improvement in this regard will be shown for the year 1927. The full 5 points are obtained for the proper marking of bottled milk to show the distributor, the grade, and date of production or pasteurization. This gives a score for milk supervision of 33.7 out of a possible 60 points.

The cost of New Haven's milk inspection service amounts to approximately $7,844 a year or 4.4 cents per capita. The standard for such service is 5.5 cents; so that New Haven is to be congratulated on having a milk inspection bureau which is not only efficient but very economical. The low score on the Appraisal Form can and, we believe, will be materially raised during the next few years by the continuation of the policies now in force.

4. **Supervision of Ice Cream Plants.** In connection with this important phase of the dairy products business special progress has been made. A preliminary survey of the 40 ice cream manufacturing plants in New Haven and vicinity was made in 1922, and instructions were given the proprietors in regard to the improvement of their plants from a sanitary standpoint. As the inspector was then

detailed to other duties, few additional inspections were made until 1926 when an extended re-survey was conducted and the plants were scored. Laws governing the manufacturing of ice cream had meanwhile been adopted by the State and the office of the State Dairy and Food Commissioner had refused permits to several manufacturers who did not comply with the requirements. Fourteen of the earlier plants had gone out of business and six new plants had started operation, making a total of thirty-two plants supplying the city.

This inspection work was continued in 1927, and it was found that four manufacturers had retired from business and three new plants had started, making a total of thirty-one. These plants have been scored and many improvements noted over previous years.

In scoring the plants the sanitary conditions of surroundings, rooms and apparatus were considered, and two plants scored 100 points, 20 between 90 and 100, and nine from 80 to 90. Of the 31 plants, 6 are wholesale and 25 manufacture only for sale on the premises.

5. **Inspection of Food Stores.** The supervision of food supplies (other than milk) is divided between two inspectors. One of these inspectors, J. J. O'Gorman, has charge of hotels, restaurants, bakeries, candy stores, soda fountains, and macaroni factories, while the other, H. J. Frederick, supervises meat markets, slaughter houses, and grocery stores. Food establishments of all these types are inspected and cafes, restaurants and public dining rooms are also scored, a score of at least 70 being required before a license is issued. Scores are published in the health department bulletin. A tabulation of the scores of restaurants and lunch rooms published in August, 1927, indicates

the degree to which these establishments have complied with sanitary methods approved by the health department.

SCORES OF RESTAURANTS AND LUNCH ROOMS.

Scores	*Number*	*Per cent of Total*
90-100 (Excellent)	93	38.1
80-89 (Good)	56	23.0
70-79 (Fair)	95	38.9
Under 70 (Not approved)	0	0
Total	244	100.0

It is noteworthy that 38 per cent of these establishments scored 90 or higher on a basis of 100 as perfect. Of the 244 establishments, 66 were new within a year and were scored for the first time; 52 showed higher scores and 8 lower scores than in the previous year.

Bakeries are also inspected but have not been scored since 1922. Scoring of this type of food establishment will be resumed next year. Bakeries are also licensed and inspected, though in a very desultory fashion by the State Division of Factory Inspection. The fact that bakeries are licensed and inspected by both city and State leads to some confusion, and a closer working relationship between these two groups should be sought, to avoid at least conflicting orders if not duplication of inspection.

Regulations have been adopted by the Board of Health in an effort to secure the proper cleansing and sterilization of utensils used in serving food and drink to the public, and the laboratory has made important contributions to our knowledge of the best means of attaining this end. The educational work of the inspector supplemented by laboratory tests of the results of sterilization measures have markedly improved methods of cleansing eating and drinking utensils.

In 1926 the following inspections of food stores were made: restaurants, 2906; bakeries, 1981; markets and stores, 4100; others, 2173. During the past ten years marked improvement has been secured in the condition of food establishments as a result of the educational activities of the inspectors and the hearty cooperation received from wholesale and retail food handlers.

The city has excellent regulations forbidding the exposure of various types of foodstuffs to dust and flies and dealing with various other aspects of food control but there are at least three outstanding gaps in the sanitary regulations pertaining to this general subject.

a. There should be a specific and definite prohibition of the taking of shellfish from New Haven harbor for any purpose whatever. There is at present a regulation forbidding the sale of such shellfish but even this clause is rendered practically inoperative by Sec. 345 of the City Ordinances which provides that "no person shall be punished for selling or offering oysters, clams or other shellfish for sale unless it be affirmatively proven that at the time of such selling or offering for sale such oysters clams or other shellfish were unfit for food." This ordinance places an altogether impossible burden upon the prosecuting authorities and the only practical method of dealing with the situation is to assume, as the State and Federal authorities rightly assume, that all shellfish from this area are dangerous to health. They are just as dangerous a food to the person who collects them as to a second individual to whom they might be sold.

b. As pointed out by Messrs. O'Gorman and Frederick in their last report there should be a specific regulation forbidding the storing of crated live chickens on sidewalks and in stores under dwelling houses on account of the of-

fensive conditions resulting from droppings and bird lice.

c. As it is also urged by the food inspectors there should be a regulation controlling the holding in stores and cellars of swelled canned goods and cans which have burst open as a result of decomposition.

We also heartily endorse the suggestions of Messrs. O'Gorman and Frederick that cooperation should be secured from other city departments in the reporting by policemen on night duty of rats in or about food stores, by sheriffs of the closure of food establishments and by the fire department of fires in such establishments so that the insanitary conditions likely to ensue may be prevented.

6. **Meat Inspection.** One of the two food inspectors divides his time between grocery store inspection (included in the previous section) and the inspection of meat markets and slaughter houses. Three establishments of the latter type were licensed in 1926.

The control of the sale of meat from diseased animals is a problem of considerable importance. Over 90 per cent of the meat products consumed in New Haven are shipped in interstate commerce and are therefore subject to Federal inspection. The rest of the supply, of local origin, comes largely from slaughterhouses in outlying districts beyond the city limits. The animals, if the meat is for the Jewish population, are inspected at the time of killing by Jewish rabbis (Koshermen) and only meat which reaches their standards can be sold to Orthodox Jews. The health department inspector, (who is not a veterinarian but has a good practical knowledge of meat inspection) also inspects the animals locally slaughtered and this activity occupies a large part of his time. In 1926, 1051 inspections of this kind were made and 98 animals and 5,862 pounds of

meat were condemned. The fees received for this service (unlike the fees received for other food inspections and licenses) are turned directly into the City Treasury without passing through the health department or appearing in its records. This is obviously an unsound practice since all the activities of employees and their results should be routed through the administrative head under whom such employees serve.

The effective control of diseased meat can only be secured by inspection at the time of slaughtering and so long as ten per cent of the meat sold in New Haven is produced in small slaughter houses the attempt to deal with the problem must remain more or less unsuccessful. Ten years ago we recommended "that steps should be taken to provide a municipal slaughterhouse within the city limits and that regulations be included in the Sanitary Code prohibiting the sale of meat which has not been passed at the time of slaughter by either Federal inspectors or those of the local department of health." The Board of Health has repeatedly urged such a course of action and shortly before the war a small appropriation ($10,000) was made for this purpose. This proving of course insufficient, the first project has lapsed. We believe that this is a community need which must ultimately be met.

7. **Medical Inspection of Food Handlers.** In many cities the supervision of the sanitary conditions of food stores is supplemented by routine medical examination of the food handlers themselves, to protect the public against possible infection from persons affected with tuberculosis, syphilis or other communicable diseases. It is certainly true that diseased individuals constitute a more serious danger to food than uncleanly surroundings; and we believe that the possibility of introducing such a system should

be given serious consideration in the future. An effective system of medical examination of food handlers, is, however, a costly procedure; and there are other health department needs which are more urgent and immediate.

Meanwhile it is most encouraging to note the substantial progress which is being made in securing the essential ends of the food handlers' examination through purely voluntary cooperation of certain industries. The ice-cream manufacturers, in particular, have been most responsive in furnishing medical certificates of the health of their employees provided by their own physicians. There are now on file in the Department 92 such certificates covering the workers in 30 of the 31 ice cream plants in the city. Only one proprietor, employing a single ice cream maker, has refused to cooperate.

The New Haven Dairy Company (Eastern Dairies, Inc.) the Childs' and Waldorf restaurants and the Bond Bread Company also voluntarily furnish such certificates. All food handlers at Yale Dining Hall are examined by the University Department of Health.

8. **Appraisal of Food Control (other than milk).** The A.P.H.A. appraisal form allows only 15 points as an index of the work of food supervision. These points are divided equally into three groups. Five points are allowed if there is made an annual physical examination of food-handlers for communicable diseases, which has as a part of the service, instruction in the hygiene of food handling and personal hygiene by lecture or demonstration. This activity as we have seen is only carried out in New Haven by a few firms on their own initiative for which no score can fairly be allowed.

If food-handling establishments are licensed, five points are obtained. A full score is given in this case. Five

points are also given if the number of inspections and re-inspections of food-handling establishments amounts to 4,000 per 100,000 population. New Haven inspectors more than obtained this quota as indicated above, and full score is credited. This gives a score of 10 for food supervision out of a possible 15 points.

The cost of inspection in New Haven for food products other than milk amounts to $3922, or 2.2 cents per capita. The standard figure is 5.1 cents, so that New Haven receives a reasonably adequate service for less than half the standard figure,—a highly creditable showing.

9. **Summary and Recommendations.** On the whole, the system of food control in New Haven is efficient and economical. The progress made in the improvement of the city's milk supply during the past few years is especially noteworthy and is deserving of the highest praise. Further progress along the same line is however needed before the city can measure up to the best sanitary standards. Full credit for milk control on the basis of the appraisal form calls for 100 per cent pasteurization of milk (New Haven, 1926, 88 per cent) and for only 4 per cent of milk samples after pasteurization below 50,000 bacteria per cubic centimeter. (New Haven, 1926, 37 per cent). The system of control of foods other than milk needs the support of revised sanitary regulations; and the problems of a municipal slaughter house and a system of medical examination of food handlers will require consideration in the future. We make the following specific recommendations.

Recommendation 22. That every effort should be made to secure the pasteurization of a still larger proportion of New Haven's milk supply, in view of the demonstrated fact that no raw milk can be guaranteed to be a safe food.

Recommendation 23. That the system of inspection and bacteriological control of milk supplies be extended and supplemented by examinations of raw milk before pasteurization in order to improve the operation of pasteurization plants and subsequent handling to a point where the bacterial content of the final product shall conform to the Appraisal Form standards.

Recommendation 24. That new regulations be added to the Food Code dealing with the taking of shellfish from New Haven Harbor and with other specific points mentioned in the text and that conflicting municipal ordinances should be repealed.

Recommendation 25. That fees paid for meat inspection should, like other license fees, be turned into the City Treasury through the executive office of the Health Department so that proper records may be kept and proper control exercised and so that the Department may receive credit for this factor of municipal income.

Recommendation 26. That the project for a municipal slaughter house should be reconsidered and plans and estimates made with a view to the possible ultimate realization of this desirable element in the sanitary machinery of the city.

Chapter XI.

CONTROL OF ACUTE COMMUNICABLE DISEASES.

1. **General Organization and Methods.** The Bureau of Communicable Diseases of the Health Department under Dr. Dwight M. Lewis, includes two Divisions, dealing respectively with Epidemiology and with Venereal Diseases. The latter will be discussed in a succeeding chapter.

The Division of Epidemiology is under the direct control of Dr. Lewis, with F. U. Thatcher as an assistant, four nurses and a stenographer. This staff is well adapted to the purposes in hand, and is achieving excellent results.

The first task of the Division is to secure the prompt reporting of the ordinary communicable diseases to the health department, and the results attained in this respect are better than the average for American cities.

Systematic investigations of reported cases are made as the need is indicated by the epidemiologist or his assistants, and consulting diagnostic service is provided to physicians. In both respects an ample volume of service is rendered. Individual epidemiological case histories are made for typhoid, diphtheria, scarlet fever, poliomyelitis, and meningitis, and all essential facts concerning these diseases are recorded. Records of cases are filed, with disease incidence correlated with other epidemiological information, such as source of milk supplies, schools attended and the like. Spot maps of important diseases are maintained as are chronological charts of cases.

Control practices in general correspond with accepted standards of the American Public Health Association. All known diphtheria contacts are cultured and controlled, susceptible contacts are either passively or actively im-

munized, cases are released on culture. Antitoxin is distributed free to physicians for any case or contact, unable to pay for it, and the virulence test is used on all initial positive cultures, (being made in the State Laboratory). Typhoid cases are released from isolation only after negative cultures. All known susceptible contacts of smallpox, and 99.5 per cent of the first grade school children are vaccinated. Child contacts of scarlet fever are effectively controlled for 7 days.

Hospitalization of communicable disease cases is carried out on a contract basis at the New Haven Hospital and 40% of the cases of typhoid, and 22% of the cases of scarlet fever were thus cared for in 1926; but only one of the 29 cases of diphtheria occurring in 1926 was hospitalized. There were no cases of smallpox occurring during the year.[1]

2. **Appraisal of Communicable Disease Control.** The Appraisal Form allots 175 points for communicable disease control, and New Haven in 1926 obtained 159 of these points. A perfect score was recorded for reporting (except in the case of typhoid fever) in record keeping, in general methods of diphtheria control, typhoid control, smallpox control, scarlet fever control and control of oph-

[1] During the months December 1927 to March 1928 an epidemic of smallpox broke out in Middletown, Conn. which spread to other surrounding communities and ultimately caused nearly 150 cases. In the middle of January two cases were found in West Haven and one in Killingworth (derived from the Middletown outbreak) which had been in contact with many New Haven residents and one case in New Haven itself. The Board of Health at once inaugurated a vigorous campaign for general vaccination (although without compulsion except in the case of known contacts). The efficiency of the Department and the response of the public were so remarkable that within a week's time 100,000 vaccinations had been performed. Not a single case has occurred in New Haven since January,—although if the disease had spread as it did in Middletown there would have been at least 800 cases. The cost of the whole campaign to the city was estimated at less than $7000. (See Monthly Bulletin, New Haven City Department of Health for February 1928). All in all, this is one of the most successful anti-smallpox campaigns in the entire history of public health and reflects the greatest credit on the Department of Health.

thalmia, in home visitation of communicable disease and in diagnostic service. The losses are distributed as follows: 1 on reporting of typhoid and paratyphoid; 7 on low percentage of diphtheria cases hospitalized; 1 on somewhat low percentage of scarlet fever cases hospitalized; and 7 on immunization of pre-school children (16% immunized, whereas full credit is given for 25% or more).

These results on the Appraisal Form indicate the activities which may well receive greater emphasis as the facilities of the department become more readily available. Already, as we shall see, the department has begun to focus its diphtheria immunization campaign on pre-school children who are most susceptible to the disease. Although one reason for the low rate of hospitalization of diphtheria and scarlet fever cases may have been the mildness of cases, it is somewhat surprising to find that less than 4% of the diphtheria cases were hospitalized; but with the progressive decline in this disease the situation promises to take care of itself.

3. **New Haven's Diphtheria Program.** The ideal standard of performance in respect to diphtheria control set by the Appraisal Form is an exceedingly high one, purposely set high to encourage progress in this important field. In spite of the fact that New Haven does not as yet quite meet this standard, the results accomplished during the past few years have been so remarkable as to place the city in the forefront of American municipalities in this regard.

Between 1880 and 1890, the diphtheria death rate of New Haven ranged from 50 to 100 per 100,000. The introduction of antitoxin treatment cut the mortality to a figure between 10 and 20. At or about that level, it remained until 1921, and it seemed as if no further progress could

be made since, if antitoxin alone be relied upon, some cases will always be treated too late to be cured. Then there began the use of a new method of control, the active immunization of children by the use of toxin-antitoxin so as to protect them against the disease in the future. Dr. Rice began an active campaign along this line almost as soon as he took office. A vigorous effort was made, and has been continued, for the protection first of school children because they were easiest to reach, and then of children of pre-school age,—the most important group of all since it is during the first years of life that diphtheria mortality is greatest.

Physicians attached to the Bureau of Child Hygiene go from school to school holding sessions for the immunization of all children whose parents desire it, and the nurses go from home to home in the particular districts explaining the procedure and urging its adoption. During 1926, 1,677 children of pre-school age, 1,008 kindergarten children, and 2,509 grade children were immunized, while 64 pre-school and kindergarten children and 1,630 grade school children were found to be naturally immune by the use of the Schick test. Dr. Rice estimates that as a result of the last four years' work, 75% of the 29,000 old pupils in New Haven's schools are already protected against diphtheria; that of the 3,000 new pupils entering the schools last fall, 25% were protected before entrance and 70% more will be protected during the year; and that of the 17,000 children of pre-school age, 25% are protected and 8% more will be reached during the winter. Every effort has been made to secure the active cooperation of physicians in this program by urging them to immunize their private patients.

As a result of this remarkable campaign, the incidence of diphtheria has been so reduced that there were but 3

deaths from diphtheria among residents of New Haven in 1925, 1 in 1926 and 3 in 1927. The following death rates (for residents) have been recorded.

RESIDENT DEATH RATE PER 100,000 FROM DIPHTHERIA, NEW HAVEN.

Average 1918-1922	10
1923	5
1924	2
1925	2
1926	1
1927	2

Among all the cities of over 100,000 population in the United States, New Haven ranked third in 1925 from the standpoint of diphtheria incidence, only Duluth and Norfolk having lower death rates. In 1926 it was tied with Youngstown, Ohio, for first place.

For the first nine months of 1927, (the last period for which the State Board of Health has issued figures), New Haven ranked as follows in comparison with the other large Connecticut cities with respect to case incidence of diphtheria—indicating that the decrease of cases of this disease has been as striking as the decrease in the death rate.

CASE INCIDENCE OF DIPHTHERIA IN LARGE CONNECTICUT CITIES, FIRST NINE MONTHS OF 1927.

	Cases per 100,000 population
Bridgeport	118
Waterbury	50
Hartford	36
New Britain	28
New Haven	16

This record is one of which New Haven may certainly be proud. With the progress of the campaign for the im-

munization of pre-school children, we may confidently look forward to the practical elimination of diphtheria as a cause of death in the near future.

4. **The Importance of Promoting the Use of Sera and Vaccines.** The control of diphtheria is one outstanding example of what can be accomplished by the almost miraculous sera and vaccines which modern biologic science has placed at our disposal. In the prevention of typhoid fever and smallpox, in the treatment of scarlet fever and tetanus, we may have the aid of similarly potent products. It would seem obvious that every possible effort should be made to foster their widest possible application for the saving of human life.

The State Law of Connecticut has since 1915 authorized the State Department of Health "to procure diphtheria antitoxin, tetanus anti-toxin and vaccine lymph for the free use of people of the State upon whom the purchase thereof would impose a financial hardship, and to distribute the same to town, city and borough health officers who shall furnish the same to such persons upon recommendation of attending physicians." In 1919 this law was amended to include "other biologic products" in addition to the three mentioned.

In the past it was the policy of the State Department of Health to interpret this law somewhat broadly and to distribute biologic products freely to all physicians, merely requiring them to sign a slip stating that payment for the same would impose financial hardship.

During the sessions of the 1927 legislature the Committee on Appropriations became greatly concerned about the use of these state sera and vaccines for persons not really indigent and insisted on the setting up by the State De-

partment of Health of elaborate machinery for distributing such materials only through local health departments with an exact accounting of every package to see that not one was used except by the poor. This is of course in accord with the law as it stands, and the State Department has no other course than to comply. The present procedure, however is most vexatious for both health officer and physician and cannot but tend to decrease the use of sera and vaccines and the consequent protection of the public against disease. It would be highly desirable to amend this law at the 1929 session of the legislature so as to remove the present limitations as to indigence and to permit the wider use of sera and vaccines—recognizing that these products are not primarily medicines for the poor but means of checking the spread of communicable disease and thus promoting the public health.

5. **The Hospitalization of Communicable Disease.** Special note should be made of the extraordinary advantageous arrangements made by the City for the hospitalization of cases of communicable disease. Such cases are cared for in the Isolation Building of the New Haven Hospital at a fixed rate of $3.00 a day—the particular types of disease to be covered in this way being specified by a joint agreement between the Hospital, the Department of Health and the Department of Charities. The city originally contributed $75,000 toward the construction of this pavilion.

The care of such cases of communicable disease in 1926 cost the city $5,370, while the estimate of the American Public Health Association for this item in a city of the size of New Haven is $36,400. There are two reasons why New Haven cares for its communicable disease at about one-seventh the normal figure. One is that the terms of the

contract are extraordinarily favorable to the city since it pays only $3.00 a day for service which costs the hospital $7.00 a day. The major element of economy lies, however, in the fact that the care of city communicable disease cases in a ward of a general hospital is inherently far more economical than the maintenance of a special isolation hospital by the city itself. It is on this latter plan which necessarily involves large overhead and the upkeep of empty beds for much of the year upon which the A. P. H. A. estimate is based.

In one respect only New Haven has in the past lacked the advantage of cooperation with a general hospital. According to the contract with the New Haven Hospital, smallpox cases could not be received in the Isolation Hospital on Davenport Avenue, a provision inserted in deference to prejudice of neighboring property-owners when the pavilion was built. The city has therefore been forced to maintain a special smallpox hospital on the grounds of the Poor Farm which of course lay empty most of the time, and when it was needed the expense of renovation and staffing was necessarily very great.

The prejudice against treatment of smallpox in the Isolation Ward of a general hospital is of course entirely unreasonable and it is gratifying to note that negotiations between the Health Department and the Hospital have led to the removal of this restriction.

6. Retrospect of Achievement in the Control of Acute Communicable Diseases in New Haven.

In a later chapter we shall review the vital statistics of New Haven for a period of fifty years in some detail. It may be of interest here, however, to note what has been accomplished with respect to the particular group of diseases now under consideration, (excluding tuberculosis

which will be considered in another chapter). In the table below we have computed the average death rate from each of these diseases for three three-year periods, fifty years ago, twenty-five years ago, and today. The picture is a striking one.

DEATH RATES FROM CERTAIN OUTSTANDING COMMUNICABLE DISEASES.

DEATHS PER 100,000 POPULATION

	1875-77	*1900-02*	*1924-26*
Diphtheria	153	16	3
Measles	10	8	2
Pneumonia	122	174	142
Scarlet Fever	97	5	2
Typhoid Fever	50	52*	4
Whooping Cough	21	24	6
Total	453	279	159

The results obtained in the reduction of diphtheria, scarlet fever and typhoid fever are nothing less than astounding. From their early place as major causes of death, these diseases have now become of almost negligible importance. The reduction in the total death rate from this whole group of communicable diseases (from 453 per 100,000 in 1875-77 to 159 in 1924-26) amounts to the saving of 529 lives every year in the city of New Haven.

7. **The Problem of the Future—Pneumonia.** It will be noted that pneumonia is the only one of the major acute communicable diseases which has failed to show a satisfactory reduction. The table below which includes all acute communicable diseases (except tuberculosis) among residents of New Haven† indicates the relative extent of

* This figure is abnormally high for the period on account of the water epidemic of 1901.

† Unless otherwise specified all figures and rates in this report include non-residents.

the present problem and makes it clear that pneumonia and its allied diseases, influenza and bronchitis, account for 12 times as many deaths as whooping cough, typhoid fever, measles, scarlet fever, encephalitis and diphtheria put together.

DEATHS AMONG RESIDENTS OF NEW HAVEN FROM ACUTE COMMUNICABLE DISEASES IN 1926.

Pneumonia	249	Whooping Cough	9
Influenza	17	Typhoid Fever	4
Bronchitis	12	Epidemic Encephalitis	3
		Measles	3
		Scarlet Fever	3
Total, acute respiratory diseases	278	Diphtheria	1
		Total, all other diseases	23

Not only is pneumonia the most important acute communicable disease in New Haven, but the death rate from this cause is substantially higher in New Haven than in other American communities. We called attention to this fact in the 1916 Survey and the condition still obtains. The Census Mortality Statistics for 1924 (the last year for which such comparative data are available) gives New Haven a pneumonia rate of 123 against a rate of 116 for the Registration Cities as a group, and of 98 for the entire Registration Area. Climatic conditions, to which reference has been made in an earlier chapter, no doubt contribute materially to this circumstance.

It is clear that pneumonia is the major problem of the future, so far as the communicable diseases are concerned. The reason is that we have no sound basis of knowledge on which to base our campaign against it. We do not even know to what extent the element of contagion is really the determining factor in the spread of this disease or whether

lowering of vital resistance plays a major part. The City of Pittsburgh is treating pneumonia on the basis of the former assumption and is isolating and placarding and disinfecting just as it does for scarlet fever. On the other hand, recent bacteriological studies seem to suggest that multiple cases of pneumonia in a particular group of persons are often due to quite different strains of pneumonia organisms. Pearl has brought forward suggestive evidence of the significance of hereditary factors in pneumonia. What we need at the moment is more light on the bacteriological and epidemiological and physiological factors involved in a large number of cases of this disease so that we may really know what factors are most important. If the facts can be ascertained, there is reasonable ground for confidence that sanitary or serological or hygienic measures can be devised which will be really effective.

Many investigators all over the world are studying this problem; but there seems no reason why New Haven should not do its share. The high calibre of its health department, and the presence of the Yale Medical School, with some of the leading authorities on pneumonia in the United States on its faculty, would appear to promise contributions of great value. It seems to us highly appropriate that the Board of Health should create a New Haven Pneumonia Commission to make an intensive local study of this vitally important health problem. With the decrease which is taking place in the ordinary acute communicable diseases, the staff of the Health Department Division of Epidemiology should be able to devote a considerable part of its energies to such a study.

8. **Summary and Recommendations.** On the whole, New Haven's campaign against acute communicable diseases is well organized and successful. Typhoid fever,

scarlet fever, and diphtheria have all been reduced to almost negligible importance; and the program for immunization against diphtheria, in particular, has brought notable triumphs, placing New Haven in the very forefront of American cities in this regard. This program should be continued with vigor so that the pre-school population may be more widely immunized so that the ground already won may not be lost, and so that diphtheria may wholly disappear as a cause of death in this city.

The major health problem of New Haven, in the field of the communicable diseases, is pneumonia and the city should feel a special responsibility for doing its part in accumulating the knowledge necessary to combat this enemy successfully.

We therefore make the following recommendations:

Recommendation 27. That the admirable program of the Health Department for the protection of children against diphtheria be continued and extended to the end that all children under five shall be immunized as rapidly as possible, and that the same protection be extended to the infants born in the future about the sixth month of their first year of life; and that the practicing physicians of the city be urged to cooperate in this task by the routine immunization of infants in the families under their charge.

Recommendation 28. That the City Authorities and the Community Chest should use their influence with the Legislature to secure the amendment of Section 2388 of the General Statutes so as to secure the widest possible use of sera and vaccines for the prevention and treatment of communicable diseases so that the health of the people

of the towns surrounding New Haven and of the State as a whole may be protected to the full degree which medical science now permits.

Recommendation 29. That the Board of Health create a New Haven Commission on Respiratory Diseases to conduct such studies as it may find practicable in regard to the bacteriological, epidemiological, physiological and hygienic factors contributing to the causation of pneumonia and its allied diseases in the hope of contributing to the solution of this major health problem of the present day.

Chapter XII.

PUBLIC HEALTH LABORATORY SERVICE.

With the cooperation of Ira V. Hiscock, Assistant Professor of Public Health, Yale School of Medicine.

1. **General Facilities.** A well organized public health laboratory is one of the foundations of effective health work and is an invaluable means of coordinating health activities. The health department laboratory, until the summer of 1927, was located on the third floor of the building occupied by the Police Department on Court Street, in crowded quarters, which distinctly handicapped effective service. The laboratory is now located at 212 Orange Street, and is more accessible for physicians and others who use it. The quarters are considerably more spacious and better adapted for the types of work performed. The staff consists of a director, a technician, a stenographer, and a helper

2. **Services Provided.** In addition to the facilities offered by the City Laboratory, New Haven has at its disposal the resources of the State Department of Health Laboratory at Hartford, to which certain types of examinations are referred; and also those of the excellently equipped Brady Laboratories of the Yale School of Medicine and those of the laboratory at Grace Hospital.

The city laboratory renders the following services:

1. The bacteriological examination of cultures for diagnosis and release in diphtheria, and of specimens for diagnosis, and release where indicated, in tuberculosis, typhoid fever, malaria and gonorrhea.

2. The chemical and bacteriological examination of milk.

3. The bacteriological examination of the public water supply.

4. The study of research problems of a public health character.

5. The distribution of biological products for prevention and treatment of disease.

The diagnostic aid afforded to local physicians and to the health department epidemiologist by the laboratory has undoubtedly been an important factor in the control of communicable diseases. Outfits for collecting specimens are supplied to physicians, and laboratory procedures correspond with accepted practice.

Among the special activities of the year, reference may be made to the septic sore throat outbreak in the fall of 1926. Cultures were examined for the presence of Streptococcus hemolyticus, a total of 115 examinations having been made with 22 positive findings. Swabs routinely submitted with cultures to be examined for diphtheria have also been scrutinized for detection of the presence of Streptococcus hemolyticus, 1,388 such examinations having been made.

The facilities of the laboratory have not been adequate for carrying out Wassermann tests for syphilis, and consequently such examinations have been made in the State laboratory in Hartford or in local hospital laboratories. Likewise, virulence tests of diphtheria bacilli have been made for the local department by the State laboratory. All morphologically positive diphtheria cultures are sent to the State laboratory for this purpose, 205 such cultures having been submitted in 1926, of which 110 were positive.

For the past two years, special examinations have been made of persons engaged in the oyster shucking industry. Only persons from whom negative results are obtained from urine and feces examinations are issued certificates.

While the number of cultures submitted to the laboratory for diphtheria diagnosis has fallen off during recent years, more time-consuming work has been undertaken. Three hundred and fifty-eight specimens of feces and urine were examined to determine whether or not the persons from whom the specimens were obtained were typhoid carriers. Most of these specimens were from persons engaged in the oyster shucking industry, among whom one carrier was found in 1926. Permits were issued to 102 persons engaged in this work. Two other persons were found to be typhoid carriers during the year.

The city water is tested daily for bacterial content at the laboratories of the New Haven Water Company, where chemical analyses are also made monthly. In addition, as we have seen, the city laboratory makes bacteriological tests twice each month as an added control. Neither of these laboratories has however been using the new standard methods promulgated in 1923, and further modified in 1925.

An effort is made to test samples of milk from each dealer at least four times every three months. The regular bacteriological and chemical analyses of milk of the many dealers supplying New Haven and the publication of results, quarterly, have been important factors in the improvement of the milk supply. The establishment of their own control laboratories by certain of the large dealers has materially aided in this campaign. One of these private laboratories has already been placed on the list of "approved laboratories of the State Department of Health; and it seems highly desirable that others should apply for this recognition.

All biological supplies are obtained from the State Department of Health and are distributed by the local laboratory. These supplies consist of diphtheria, scarlet fever,

and tetanus antitoxin, smallpox and typhoid vaccine, Schick test outfits, and toxin-antitoxin.

During the year 1926, the laboratory examined a total of 8,191 specimens for diagnostic purposes, in addition to 200 samples of water and 1,629 samples of milk. A total of 14,476 examinations were made of these specimens and samples because certain types of samples, as milk, require more than one kind of examination. This is an increase in total examinations over the previous year of 930.

3. **Appraisal of Laboratory Service.** The Appraisal Form allots 70 out of the 1,000 total points for a perfect score on laboratory service. Applying the service rendered in New Haven by the health department and other laboratories used, a total score of 67.0 points is obtained. The score is distributed as follows: (a) Diphtheria: 20 points; Standard, 250 examinations per annual death. In 1926 there were 4,263 examinations with only one resident death; hence the full score of 20 points was obtained. (b) Typhoid: 7 points; Standard, 75 examinations per annual death. In 1926 there were 781 examinations with 4 deaths; hence the full score of 7 points was obtained. (c) Tuberculosis: 8 points; Standard, 5 examinations per annual death. In 1926 there were 471 examinations by the local laboratory and 26 by the state, in addition to those made in hospital laboratories. There were 97 deaths; hence the full score is allowed. (d) Syphilis: 5 points; Standard, 12 examinations per case reported. There were 205 cases reported. In the State laboratory, 2,620 examinations were performed, while an even larger number of examinations (approximately 6,000) were made in the Brady Laboratory of the New Haven Hospital and in the Grace Hospital laboratory (1,017 examinations). The State lab-

oratory figures are adequate, however, to give full score for this item. Thus while New Haven is well above its quota and receives full score, it is observed that the examinations were made in laboratories other than that of the local health department. (e) Gonorrhea: 5 points; Standard, 5 examinations per case reported. There were 244 cases reported, and 1,138 examinations were made in the health department laboratory alone, with 6 in the State laboratory, giving a full score, in addition to several hundred analyses made in the hospital laboratories. (f) Milk: 15 points; Standard, 100 analyses per 100,000 gallons of milk distributed. During the year 1926 there were made 6,359 examinations on approximately 8,212,500 gallons (city's annual milk consumption). Thus New Haven's quota was 8,212 examinations. A score of 12 (77%) of the 15 points is allowed. (g) Water: 10 points; Standard, 1 examination daily. As daily examinations of the water supply are made by the New Haven Water Company, a full score is given.

4. **Summary and Recommendations.** The laboratory work carried on by the health department is essentially of a routine character. In general, Standard Methods are employed, although the procedure used in water analysis has only been brought up to date in the course of the survey.

Most city laboratories in communities of the size of New Haven make their own Wasserman tests and the possibility of expansion in this direction might well be considered. The city should also in the future be able to make its own diphtheria virulence tests by the use of the new Falk electrophoretic method if experience elsewhere justifies present hopes. We would urge that the laboratory initiate the typing of pneumonia cultures as a part of the comprehensive campaign which we have suggested for the control of this disease. It seems most important that the

examination of milk samples should be considerably extended to cover examinations of raw milk before pasteurization with special emphasis on those dealers who now fall below standard. The laboratory force should also have opportunities for the study of the research problems which constantly arise in the course of their work for a wholesome spirit can scarcely be maintained in a laboratory where only routine work is done.

The 1928 Budget of the Health Department wisely makes allowance for an additional bacteriologist and a new technician, which will bring the staff and budget nearer to the level of standard procedures. We would merely suggest as

Recommendation 30. That when the two much needed additions are made to the staff of the City Laboratory there should be a considerable increase in milk examinations (including examinations of samples of raw milk before pasteurization) with special attention to dealers producing high count milk; while consideration should be given to the desirability of making diphtheria virulence tests; typing pneumococci; perhaps making Wasserman examinations; and to research.

Chapter XIII.

TUBERCULOSIS.

1. **The Problem.** Fifty years ago pulmonary tuberculosis was far and away our greatest single cause of death. In 1877 there were 157 deaths from this cause, with 86 from cholera infantum and 72 from scarlet fever ranking next. The death rate was 265 per 100,000. Even 20 years ago, in 1907, tuberculosis was the third cause of death, exceeded only by heart disease and pneumonia and with a death rate of 185 per 100,000.

By 1926, pulmonary tuberculosis had dropped to seventh place, with a death rate of 33, exceeded by heart disease, pneumonia, apoplexy, cancer, nephritis and Bright's disease and diseases of infancy. Including non-pulmonary tuberculosis the 1926 rate was 48. In comparison with other cities this rate is very low. Nevertheless, it is obvious that a disease which causes 100 deaths a year in New Haven—and which strikes down its victims in early maturity at their period of maximum productivity,—offers a serious problem.

The data cited above all refer to the total number of deaths reported within the city of New Haven. In the case of tuberculosis, such uncorrected data are specially misleading since so many deaths from this disease among New Haven residents occur in sanatoria outside the city limits. Dr. H. R. Edwards, Director of the Division of Tuberculosis of the Department of Health informs us that of the 88 deaths from all forms of tuberculosis (on which the rate of 48 is based) 19 were deaths of non-residents occurring in New Haven while 34 deaths of New Haven residents were reported from sanatoria outside the city. The cor-

rected figure for New Haven residents is therefore 88—19+34 or 103 which gives a mortality from all forms of tuberculosis of 57 per 100,000.

2. **New Haven's Tuberculosis Program.** When our first survey was made, ten years ago, the Health Department took almost no official cognizance of the most important of the communicable diseases. Excellent clinic service was provided by the New Haven Dispensary and the Visiting Nurse Association had five nurses assigned to specialized tuberculosis work. The New Haven Hospital was operating its Day Camp (though its abandonment was contemplated) and the Employees Tuberculosis Relief Association was in operation. Sanatorium facilities were reasonably good but inadequate in extent. There was a total lack of any constructive leadership in this highly important field of public health. We recommended that the city should make appropriations for the extension of tuberculosis nursing under the Visiting Nurse Association and for the maintenance of the Day Camp and, above all, that there should be added to the staff of the Department of Health a competent physician trained in anti-tuberculosis work "to supervise and coordinate and develop the campaign against this disease along the most effective lines."

During the next few years the city did make an appropriation of $5,000 a year for the general purposes of the V. N. A. but on the other hand opened a clinic of its own and employed three tuberculosis nurses under the health department but did nothing else in the way of a constructive attack upon the problem as a whole until 1925.

In that year Dr. H. A. Pattison of the National Tuberculosis Association, at the request of the Board of Health, made a special survey of the tuberculosis problem in New

Haven which has led to far-reaching results. His chief recommendations were the appointment of a full-time Director of Tuberculosis in the Health Department, the centralization of all tuberculosis nursing under the V. N. A. (both recommendations made in our 1916 survey) and the centralization of clinic activities in the New Haven Dispensary, with many minor suggestions to which we shall refer later. The Board of Health acted upon these recommendations with promptness and vision. In 1926 the independent clinic operated by the Health Department was consolidated with the clinic work of the Dispensary and the tuberculosis nursing work was delegated to the V. N. A. Dr. W. B. Soper was appointed as full-time Director of a new Division of Tuberculosis in the Health Department (succeeded in the fall of 1927 by Dr. H. R. Edwards). With these progressive steps and with the addition to our institutional facilities furnished by the opening of the William Wirt Winchester Hospital at Allingtown New Haven has now a coordinated central control, a coordinated clinic service, a coordinated nursing service and hospital and sanatorium facilities probably unequalled in any city of the United States. It bids fair to become the model city of the country from the standpoint of tuberculosis control.

3. **Case-finding.** The first essential in tuberculosis work is the early detection of cases of the disease in an incipient stage. The second is systematic supervision and treatment of these cases, in the home, in the sanatorium, and in the home again, until the disease is arrested and so long as may be necessary in order to see that it remains arrested.

The first step, then, is case-finding and its success is measured by the ratio of cases reported to deaths occurring from the disease. The Appraisal Form calls for a report-

ing of 2 new cases per year for each annual death but this figure is low and 3 new cases per death is the figure now more generally assumed as indicating good reporting. In New Haven in 1926 there were 270 new cases reported, 2.6 cases per death (excluding deaths of non-residents and including deaths of New Haven residents in outside sanatoria) and in 1927 350 cases were reported which should give a ratio of 3.8 cases per death. New Haven of course obtains a full score of 10 points on this item of the appraisal form.

The progress made in case-finding during the past two years is well indicated by a graph of reported cases and deaths in Dr. Edward's office which shows that these two curves ran closely parallel up to 1925 while in 1926 and, still more in 1927, the curve for reported cases shoots up far more rapidly than the curve for deaths.

Reporting by physicians is still however incomplete. Only 45 per cent of all new case reports in 1927 have come from private practitioners. Dr. Edwards furnishes us with the following results of a special analysis of data in regard to reporting by private physicians. During the five years 1923-27 582 cases of tuberculosis were reported by 144 private physicians. Two-thirds of the physicians in town did not report a single case during this period although it is probable that some of them must have seen cases in their practice. Out of the 582 cases reported, however, only 81 were reported after death, and only 75 within a period of six months or less before death which is a reasonably good record.

The Health Department has a register of some 1,100 tuberculosis cases but this register has not been recently checked up to see how many cases are really active at the moment. There are usually in a given community some 9

active cases per annual death which would give some 800 such cases in New Haven and Dr. Edwards is planning to get this list in order in the immediate future. The Department of Education has provided a list of 3,000 underweight children which will be checked up with Dr. Edwards' list of contacts,—a procedure which should prove of the greatest value in discovering those cases which need prompt attention and it should be repeated year by year. The Massachusetts program which involves concentration upon the examination of school children as a primary factor in the anti-tuberculosis campaign has given an impressive demonstration of the value of such an approach.

4. **Control of Infection.** The control of the spread of tuberculosis involves two main items,—the checking of infection passing from one human being to another and the elimination of infection from bovine sources. The first aim is usually attained by voluntary hospitalization of open cases or the inculcation of sanitary practices which,—if conscientiously observed,—make it perfectly possible for the careful consumptive to live in his own home without being a danger to the health of others. The state sanitary code provides that when a private physician formally undertakes to assume responsibility for a case of tuberculosis the inculcation of the necessary sanitary precautions shall be left entirely to him. Originally, monthly reports by the physician as to the status of each such case were required but this provision has been eliminated in order to avoid an undue burden upon the practitioner. The fundamental responsibility remains, however, and written reports definitely recognizing it should be required by the Board of Health, instead of, or in addition to, verbal reports by telephone.

In every community there are a certain number of individuals who wilfully refuse to observe the precautions necessary to safeguard others. In such instances the Sanitary Code gives the Health Department ample power to compel forcible isolation, as it would in a case of smallpox or scarlet fever. The difficulty is that there is no place where tuberculosis cases can be kept under police control, so that the law is a dead letter. The remedy for this situation (and for the similar situation existing in regard to venereal disease) is the establishment of a small state infirmary where the few cases of this kind which occur can be cared for. Such an institution would be of great value not only in those cases actually incarcerated but as a wholesome incentive to obey sanitary rules and thus avoid incarceration.

The factor of bovine infection is now admirably cared for by the general pasteurization of the city milk supply. It is the non-pulmonary form of tuberculosis in children which is generally due to milk infection and it is interesting to note from the table below that during the period of incomplete pasteurization of New Haven's milk supply this type of tuberculosis showed an absolute increase up to 1919 but has dropped with the increased pasteurization in later years.

AVERAGE DEATHS FROM TUBERCULOSIS.

Period.	*Pulmonary per year.*	*Non-pulmonary per year.*	*Per cent non-pulmonary.*
1905-9	203	29	15
1910-14	158	35	22
1915-19	139	46	33
1920-24	86	32	37
1925-26	63	21	33

Furthermore, it is noteworthy that of the 42 deaths occurring in New Haven from non-pulmonary tuberculosis in 1925 and 1926, 19 or 45 per cent were deaths of non-residents (chiefly children infected from unpasteurized milk in adjacent rural districts). Of the deaths from pulmonary tuberculosis, during the same two years only 10 per cent were non-residents.

5. **Clinic Service.** Clinic treatment for tuberculosis is now furnished entirely at the New Haven Dispensary. A clinic for adults is held by Dr. W. B. Soper, Dr. Norman Smith and Dr. Edwards, and a clinic for children by Dr. Ethel C. Dunham, Dr. M. Goldstein and Dr. A. M. Smyth (in 1926-27), the former meeting three mornings and one evening a week, the latter, four mornings and one afternoon.

The volume of work performed is indicated below.

TUBERCULOSIS CLINIC SERVICE.
NEW HAVEN DISPENSARY, 1926-27.

	Pediatric.	*Medical.*	
Ages.	*Under 6.*	*6-13.*	*13 and over.*
Old cases	237	250	277
New cases	137	297	299
Total cases	374	547	576
Visits	1,077	2,294	
Cases on file, July 1, 1927	366	522	599
Undiagnosed	4	22	39
Non-tuberculous		34	31
Contacts, no manifest tuberculosis	304	382	316
Diagnosed tuberculosis	58	84	213
Pulmonary	7	0	187
Minimal			98
Moderate			79
Far advanced			10
Non-pulmonary	51	84	26

The amount of clinic service provided is evidently ample. The Appraisal Form calls for 30 clinic visits per

annual death from tuberculosis (a very high standard) and New Haven has slightly over this number (33). For the calendar year 1927 Dr. Edwards informs us this ratio will rise to over 41 visits per annual death. Fifteen points are allotted for this item and 10 for a ratio of 3 clinic visits per patient registered. The actual New Haven ratio on this latter point is 2.3 visits per case giving 8 points out of the 10. The fact that, of 187 clinic cases of adult pulmonary tuberculosis, 52 per cent were classed as minimal, 42 per cent as moderate and only 5 per cent as far-advanced is most encouraging; and for a clinic receiving so many minimal cases the Appraisal Form ratio is probably an unreasonably high one.

The quality of service rendered by these clinics is as exceptional as its quantity. Both clinics are staffed in the main by full-time physicians who are highly qualified specialists. All X-ray and laboratory facilities are provided, with the invaluable support of the consulting service of a high grade polyclinic. The Children's Clinic is carrying on a fundamental study of the problems of childhood tuberculosis which is equalled in but few places in the world for its scope and thoroughness.

There has been a feeling among many persons connected with the tuberculosis movement in New Haven that in addition to the central clinic at the New Haven Dispensary there should be branch clinics for the examination of contacts set up in the more remote parts of the city. Some day this step will probably be necessary. We do not recommend it at present, however. The local convenience of branch clinic service is always counterbalanced by the fact that the best medical service can only be rendered in a well-equipped polyclinic and with the present size of the city this argument seems now the weightier one. It would,

however, be very helpful if a clinic for school children could be held on some week day afternoon instead of only on Saturday morning as at present, since it is often very difficult to persuade contact children to give up their Saturdays for the purpose of a visit to the clinic.

The one point that most needs strengthening, in New Haven as elsewhere, is early diagnosis by the private practitioner. Dr. Edwards is prepared to offer to the medical profession in their private practice free medical consultation service and the Board of Health will also contribute $2 toward the cost ($5) of an X-ray picture. This step is a most important one and should be highly fruitful when carried into more general execution.

6. **Tuberculosis Nursing Service.** By the admirable cooperative plan put into force two years ago all home nursing service for tuberculosis is carried by the generalized nursing staff of the Visiting Nurse Association with the aid of a special supervisor. For the past few years this position has been very able filled by Mrs. Violet H. Hodgson.

The attention devoted to tuberculosis by the Association as a part of its generalized program is well illustrated by the following figures for 1926.

	Cases Admitted.		*Cases Discharged.*	
	No.	*Per cent of all cases.*	*No.*	*Per cent of all cases.*
Diagnosed Tuberculosis...	223	2.9	218	2.8
Tuberculosis contacts.....	363	4.7	476	6.2
Total	586	7.6	694	9.0

During the year 1926, 17,786 visits were made on behalf of 719 diagnosed cases of tuberculosis and 1,495 contacts. New Haven exceeds the Appraisal Form maximum quota for this item (50 visits per annual death) by about 200 per cent.

The Appraisal Form allots 20 points for the total volume of nursing visits and 5 points more if 20 per cent of all tuberculosis field nursing visits are made on behalf of post-sanatorium cases. On this latter point we fall somewhat short according to data courteously furnished by Dr. Edwards for the year 1927 which show that only 13 per cent of nursing visits fall under this heading giving New Haven 3 points out of 5 on this item, (total visits on behalf of tuberculosis, 22,018, visits on behalf of post-sanatorium cases, 2.908).

In general the quality of the tuberculosis nursing service is as admirable as that of the clinic service.

7. **Institutional Care.** The city of New Haven has no special facilities of its own for the institutional care of tuberculosis (except for such cases as may be temporarily received at the New Haven Hospital). It is fortunate however in the neighborhood of five state sanatoria (under the State Tuberculosis Commission) and two admirable private institutions with the following capacities.

State Sanatoria:	*Beds.*
Meriden (children)	225
Hartford	200
Shelton	175
Norwich	222
Niantic (children)	59
Gaylord Farm Sanatorium, Wallingford	130
William Wirt Winchester Hospital, West Haven	56
Total	1,067

This gives a ratio of close to one bed per annual death for the state as a whole, which is the usually accepted standard. The William Wirt Winchester Hospital, which is the

tuberculosis annex of the New Haven Hospital, can be expanded up to 140 beds when additional funds for maintenance are available.

It is of interest to note that on December 1, 1927 there were 100 New Haven cases in State Sanatoria, 29 at Gaylord Farm, 17 in the New Haven Hospital, 15 at the William Wirt Winchester Hospital and 8 at the U. S. Veterans' Bureau Hospital or 169 in all. This is a remarkably good record for a city with only some 100 deaths a year from tuberculosis.

No data are available as to the number of patient-days of institutional treatment actually received by patients from New Haven. Dr. Soper informs us, however, that throughout the year 1927 the number of such patients has averaged over 160. We may then safely multiply 160 by 365 to get a safe minimum of patient-days amounting to over 58,000 patient days, more than double the standard of the Appraisal Form which calls only for 25,000 patient days per 100 annual deaths.

Dr. Edwards informs us that a study of 237 cases discharged from the state sanatoria and from Gaylord Farm since April, 1926, indicates an average length of stay of 10.3 months (or excluding three Seaside cases which are usually very prolonged, 9.9 months).

As to the condition of patients on admission and discharge we have again no specific data for New Haven patients. We may, however, take the total Connecticut figures and assume that New Haven's record is similar to that for the rest of the state. These data for 1925-6 (the Winchester Hospital has just been reopened and is of course not included in these figures) are as follows:

STATISTICS OF SANATORIUM TREATMENT FOR CONNECTICUT PATIENTS.

(Pulmonary Adult Cases only.)

PERCENTAGES OF TOTAL.

	Condition on Admission.			*Condition on Discharge.*			
	Inc.	*Mod.*	*Far Ad.*	*App. Arr.*	*Imp.*	*Unimp.*	*Dead.*
State Sanatoria...	7	28	65	8	39	25	28
Gaylord Farm....	21	62	16	57	30	12	1

In a comparison of the figures in the two lines of this table will be found the answer to the problem of tuberculosis. Of State Sanatorium cases only 47 per cent are discharged as apparently arrested or improved as against 87 per cent quiescent, arrested or improved at Gaylord Farm; and the reason for this wide difference in results is clearly seen in the difference in the type of case admitted. Gaylord Farm selects its cases so that only 16 per cent are in the far-advanced stage when admitted, while in the State Sanatoria 65 per cent of the cases are far-advanced at the time of reception. If we desire to control tuberculosis in the fullest degree,—to secure over 80 per cent of improvement instead of less than 50 per cent,—the only way to do so is to build up our machinery for early diagnosis along the lines of popular education, nursing service, clinic service and consultation service so as to get four-fifths instead of one-third of tuberculous patients into sanatoria before the far-advanced stage.

We have no data as to the stage of admission for New Haven patients but if the average is assumed to be the same as for all patients and if it is assumed that five-sixths of New Haven cases are in state sanatoria and one-sixth at Gaylord Farm we should get an approximate figure of 9 per cent of New Haven cases admitted in the incipient stage. The Appraisal Form gives 10 points for this item

with 25 per cent of cases admitted in the incipient stage as standard. New Haven would only get 4 points on this item.

8. **The Employees Tuberculosis Relief Association.** For the past fifteen years New Haven's tuberculosis program has been aided by a unique and admirable institution in the form of the Employees Tuberculosis Relief Association. This organization is primarily supported by contributions from a group of some 60 corporations, firms and business houses which are the members of the Association and which include nearly all the larger industrial concerns of the city, the fundamental aim of the organization being to provide sanatorium treatment for the employee who may develop tuberculosis. The Association, in the absence of a local Anti-tuberculosis Association of the usual type, also has charge of the local Christmas Seal Sale of the National Tuberculosis Association. In 1926 its income included $11,372.03 from its industrial members, $11,574.08 from Christmas Seal Sales, $1,189.32 from interest on deposits and investments and $2,690.66 from other sources or $26,826.09 in all. It had a balance on hand January 1, 1926 of $24,334.99 and on January 1, 1927 of $27,281.20.

Disbursements of $23,879.88 included $18,471.94 for direct relief, $3,547.02 for salaries and wages and $1,860.92 for miscellaneous purposes, the expenditures for relief being chiefly payments to sanatoria for the care of patients. One hundred and sixty patients were thus under treatment during the sixteen months from January 1926 to May 1927.

The service rendered by this Association has been invaluable in the furthering of sanatorium treatment for the industrial workers of the city.

Its funds are, however, inadequate to provide for aid to the families of cases of tuberculosis while sanatorium

treatment is being received. It must be remembered that poverty is one of the major factors in the causation of tuberculosis and any program which fails to take this into account will necessarily fail of fullest realization.

The present economic crisis appears to be a serious one as indicated by the very definite increase in demands for material relief throughout the country. We should not be surprised if all the efforts which can be put forth along medical lines for the control of tuberculosis may for a time be neutralized by this economic situation.

9. **The Supervision of the Ex-Sanatorium Case.** Next in importance to the securing of prompt recognition and early treatment of tuberculosis, is the problem of follow-up of the arrested case. In a certain proportion of instances (the extent of the proportion depending on the promptness with which treatment was begun) the patient is discharged from the sanatorium with the disease so completely arrested that he can forget about it and lead a wholly normal life thereafter. In many other instances, however, while the disease is arrested and will so remain so long as the patient continues to lead a hygienic life, it will develop once more just as soon as his vitality is lowered by overwork, undernutrition or excesses of any kind.

It is vitally essential to the full success of the tuberculosis program that there should be a definite provision for nursing follow-up and medical supervision of post-sanatorium cases. The nursing follow-up is provided in New Haven by the V. N. A. and its amount is reasonably adequate in spite of the low appraisal score cited above. The score for this item is based on the ratio of visits to ex-sanatorium cases to total visits and the total of tuberculosis visits paid by the V. N. A. is so large that this ratio is almost necessarily small.

The one outstanding defect in our whole program is the lack of systematic medical supervision for the discharged cases. There should be provided a special evening class of supervision and instruction for these post-sanatorium cases, distinct from the ordinary clinics to which all such cases (not under the care of a private physician) should be invited for periodic medical examinations and conferences and advice as to hygienic living under the actual home and shop conditions which surround them. As a result of such follow-up, the need for special provisions of housing and special workshops for the arrested case might logically develop.

10. **General Program of Education and Provision for Health Promotion.** Underlying the whole tuberculosis program, is, of course, a general campaign of education with a twofold object,—the familiarization of the public with the early signs of tuberculosis and the importance of prompt treatment and the upbuilding in the community as a whole of the general habits of healthy living which, after all, form the most effective barrier against this disease.

In most cities the educational work in regard to tuberculosis is largely carried on by a special voluntary anti-tuberculosis associations supported by the Christmas Seal Sale. New Haven has never had such an association and the seal sale funds, as we have seen, are chiefly used by the E. T. R. A. for material relief. In view of this situation and of the fact that the city has appointed a full-time director of tuberculosis it seems necessary to place the major responsibility for general education in regard to tuberculosis and personal hygiene upon his shoulders.

Closely allied to this program of health education is the provision through open-air schools, day camps and preven-

toria of means for facilitating healthy living on the part of children who, because of contact with tuberculous cases or of subnormal vitality, are in special need of upbuilding.

The subject of a preventorium can be dismissed with the statement that New Haven has no such institution and no funds for one in sight at the moment.

The William Wirt Winchester Hospital does operate a Day Camp or rather a Day and Night Camp which cared for 82 children last summer for the period from July 5 to October 1 and this camp will be further expanded next summer. Only 54 of these 82 children remained under care for over 2 months. If resources permitted it would be highly desirable to develop this Day Camp into a Preventorium (which is essentially a Day Camp operated all the year round and for twenty-four hours in the day).

The Organized Charities has a camp at Branford (supported by the New Haven Register) which receives about 200 children a summer for a two weeks outing. This is an admirable piece of work but the length of stay is too short to classify it as a true Day Camp.

The Department of Education operates 5 open-air classrooms at the Beacon, Dante, Fair Street, Prince Street, and Skinner Schools with 25-30 pupils in each room.

The Appraisal Form allots 15 points for open-air class rooms, preventoria and day-camps, full score being given if 1 per cent of the grade school population enjoys such facilities. This would mean provision for 300 children in New Haven and the actual provision is about 200 (50 in the Day Camp and 150 in the open-air schools) giving a score of 10 points.

11. **Summary and Recommendations.** New Haven enjoys almost unique facilities for its tuberculosis program in its Health Department with a full-time director of Tubercu-

losis work, its Visiting Nurse Association, with a generalized nursing service under specialized supervision, its Dispensary with nine weekly clinics and its ample sanatorium facilities with the Employees Tuberculosis Relief Association to aid in paying the cost of treatment,—the whole coordinated for the past year under the guidance of a joint committee representing the city, the Dispensary, the Visiting Nurse Association and the Employees Tuberculosis Relief Association. For quality of service no one of these organizations can be duplicated except in a few selected cities and the combination is, so far as we are aware, unequalled anywhere.

The results of this anti-tuberculosis machinery are already manifest. The present tuberculosis death rate of 57 per 100,000 (including deaths of New Haven residents in outside sanatoria) is one of the lowest in the country for an industrial city, (for the five years 1920-24, New Haven had a death rate from pulmonary tuberculosis of 51 compared with 88 for the Registration Area) but with the organization available it behooves us not to rest on our oars but to push on to the complete conquest of this once-dread disease. On the Appraisal Form, the New Haven program scores 85 points out of a possible 100, losing 2 points on proportion of nursing visits to ex-sanatorium cases, 2 points on ratio of clinic visits to patients, 6 points on low proportion of incipient cases admitted to sanatoria and 5 points on inadequate open-air school and day camp facilities. The deficiency in proportion of nursing visits to ex-sanatorium cases is largely fallacious, being influenced by the very large total of nursing visits and the small proportion of incipient cases admitted to sanatoria may be fallacious since it is based on state averages and New Haven probably stands well above the state average in this respect. With

the machinery now in operation it is the opinion of the writer that within two years we shall have a practically perfect score and that within five years even the present tuberculosis death rate can be further cut in half.

The additional steps to be taken in order to bring New Haven's program to the highest stage of perfection, (none of them except the last involving additional local community expense) are embodied in the following recommendations:

Recommendation 31. That the New Haven members of the Legislature be urged to use their influence in favor of the establishment of a small state infirmary where recalcitrant cases of tuberculosis and venereal disease can be held under forcible isolation when necessary for the protection of the public health.

Recommendation 32. That the Director of the Bureau of Tuberculosis of the Department of Health organize a systematic program of popular health instruction in regard to the importance of early diagnosis and treatment of tuberculosis with special concentration on the problem of the school child and the industrial worker.

Recommendation 33. That a special afternoon clinic for school children be provided at the Dispensary for an experimental period in order to determine its popularity.

Recommendation 34. That the Director of the Bureau of Tuberculosis continue his efforts to further the early diagnosis and reporting of tuberculosis by private practitioners, particularly by the development of free consultation service in the homes of patients or in the offices of physicians.

Recommendation 35. That special provision should be made for classes of instruction and supervision for arrested cases to which all cases reported to the Health Department as discharged from sanatoria should be invited unless they are under the care of a private physician.

Recommendation 36. That both the Day Camp at the William Wirt Winchester Hospital and the open-air room facilities in the public schools should be materially expanded.

Chapter XIV.

SOCIAL HYGIENE.*

By William F. Snow, General Director, and Staff Members of the American Social Hygiene Association.

1. **Principles Underlying the Social Hygiene Program.** New Haven has definite advantages over many other cities for developing and carrying on a broad social hygiene program. Its social welfare activities are so organized as to indicate recognition by the community of a considerable group of social problems. This fact, in addition to its being a great university town and a center for medical training, a city whose residents realize the need for constructive social betterment, and a city whose public recreational and educational systems have been well organized, make New Haven a community with unusual opportunities for becoming a model city in the field of social hygiene. Some of the essentials for such a demonstration have been recognized and well provided for; other opportunities have been allowed to pass. It will be attempted in this report to call attention to the manner in which New Haven is dealing with social hygiene problems and to point out those features of the present activities concerning which experience in other cities and states suggests some change; also to propose for consideration certain additional measures.

Social Hygiene, as understood in the United States, deals largely with such problems as the combating of the venereal diseases, the promotion of sex education, the reduction of commercialized prostitution, and other social

* Full data in regard to the extensive study on which this summary is based will be presented and published as a separate appendix.

problems growing out of sex as a factor in human life, such as marriage, divorce, and illegitimacy. President Charles W. Eliot for the purposes of the constitution of the American Social Hygiene Association endeavored to define the practical range of voluntary effort in the field of social hygiene as being: 1. To acquire and diffuse knowledge in its field, and to conduct on request inquiries into present conditions. 2. To advocate the highest standards of private and public morality. 3. To repress commercialized vice. 4. To organize the defense of the community by every available means, educational, medical or legal, against the diseases of vice.

For the present ends, the last of these purposes is stressed, but one of the recommendations will be that advantage would accrue to New Haven if a local social hygiene society or major division of some existing organization were established to continue studies and voluntary effort in the whole field.

"Hiding behind a mask, man's most dangerous enemy strikes in the dark, and adds two out of every thirteen deaths to his score,"—so syphilis is described in a statement recently made by the Metropolitan Life Insurance Company. The disease, gonorrhea, does not so frequently kill, but it has a disastrous effect upon the living. In fact, it prevents life, for gonorrhea is the chief cause of sterility.

Up to the time of the World War, little attention was paid to the problem of the control of venereal diseases. Then the United States government put into effect a successful program, known internationally as the "American plan," consisting of education, recreation, legal and protective measures, and medical and public health work. These measures are recognized today as the essentials in a social hygiene program.

Education includes not only the informing of the patient about his disease, and his duty in the protection of others, but far more—the directing of the sex life of the individual to wholesome expression under adequate control. Thus social hygiene education in all phases is a powerful force in the prevention of venereal disease.

A community program of recreation for both sexes, if sufficiently interesting, may be counted on to occupy leisure time, some of which might otherwise be spent in vicious amusements. Such a program, when well organized and directed, sets up high standards of fair play, social justice, and consideration for others, for lack of which much individual and domestic shipwreck now results. Recreation, especially when correlated with other protective measures, becomes an important factor in the reduction of those moral hazards which often result in exposure to the venereal diseases.

The relation of legal and protective measures to social hygiene and public health is fairly obvious. Anything that is done to curtail the exposure of susceptible persons to venereal disease carriers will depress the venereal disease rate. Those who indulge in promiscuous sex relations are practically all actual or potential carriers of venereal diseases. They are, therefore, mainly responsible for the spread of these diseases. Social hygiene legal and protective measures are calculated to limit the accessibility to the public of the most dangerous of such carriers. Good laws are a prime essential in the handling of sex delinquents. Proper administration of the laws is even more important.

Protective measures, on the part of official and voluntary agencies, deal both with individuals and with their environments. They provide social safeguards which aid in the guidance and direction of the habits of young people

who are drifting into sex difficulties and whose parents have been unable to provide such direction themselves by reason of death, separation or other cause.

They follow such of these pre-delinquents as have later become delinquents through the courts and supplement the court and institutional machinery by sympathetic advice and practical assistance in making their subsequent adjustments. They provide the needed assistance to both minors and adults who are mentally unfitted to meet adequately the problems of sex.

In addition they provide certain activities which are calculated to make for a wholesome environment, such as traveller's aid work, supervision of public playgrounds, school visiting especially in connection with truant cases, and provision of adequate lighting of parks.

Medical and public health work has for its chief objectives the prevention of disease in a broad sense, and the discovery, treatment, and follow-up of infected individuals, in order to restore them to health and prevent the exposure of their families and others in the community.

2. **Prevalence of Venereal Disease in New Haven.** Early in the survey an incidence study was undertaken to discover the extent of the medical problem. "How prevalent are syphilis and gonococcal infections in New Haven?" On the answer to this question depends largely the program for the prevention and control of the venereal diseases. How great is the problem? What are its complexities? Who is seeing the cases? Are the majority of infections under the care of licensed medical practitioners? Do the public health authorities collect statistical data which are essential to the proper handling of the venereal diseases from an epidemiological standpoint? Do they apply this

are fundamental to the understanding and evaluation of the public health aspect of the social hygiene activities in New Haven.

For information the student turns first to official records for such data. The state law requires that physicians report to the health officer of the city all cases of venereal diseases coming to their attention. A report is to be made by office number, with the provision, however, that if the patient fails to return for treatment while in a communicable stage of the disease, he is to be reported a second time by name and address. The State Department of Health received through the City Health Department reports of 677 cases of venereal diseases from New Haven for the year 1927, including 292 cases of syphilis and 385 gonorrheal infections. These reports were furnished by 74 physicians, 2 hospitals, 2 clinics and the jail.

To supplement official data, an incidence census was taken to find out how many cases of gonorrhea and syphilis were actually under treatment or observation by physicians and other licensed practitioners, clinics and hospitals on a given day. In all, there were approached 380 physicians, 48 other practitioners of healing arts (osteopaths, chiropractors, and naturopaths), and 11 clinics, hospitals, penal and reform institutions. Of the 380 physicians, 296 proved to be actively practicing medicine, and of these 38.5% reported that they were treating one or more cases of syphilis or gonorrhea. Fifty-one had cases of both syphilis and gonorrhea under their care, 38 reported only syphilis cases, 25 only gonococcal infections. Of the 11 institutions, 36.4% reported cases. None of the osteopaths, chiropractors, or naturopaths reported any cases.

In all, 1,403 cases of syphilis and gonorrhea were reported as under treatment or observation in New Haven

knowledge? These and other questions of a similar nature on May 12, 1927. This shows a rate of 7.39 cases per 1,000 total population. Of these, 857 cases were syphilis—a rate of 4.52 per 1,000 of population, and 546 were gonorrhea—a rate of 2.88 per 1,000. Males (1,007 cases) showed a rate of 10.46 per 1,000 of the total male population of New Haven, and females, (396 cases) a rate of 4.24 per 1,000 of the similar group in the total population.

It is interesting to compare the New Haven incidence figures with original data collected by the United States Public Health Service and the American Social Hygiene Association in other urban and rural districts. For purposes of comparison some original data collected by the United States Public Health Service and the American Social Hygiene Association in other cities and counties are quoted. In any comparison, however, it must be remembered that there are many important factors to be taken into consideration, such as size, density, and composition of population, its economic and social status, racial and nationality groupings, municipal policy toward prostitution, availability of free treatment,—all having a bearing on the prevalence of venereal diseases. Atlanta, Georgia, showed a rate of 19.56 cases of syphilis and gonoccocal infection combined per 1,000 population; Detroit, Michigan, 13.47; Cleveland, Ohio, 9.37; Peoria, Illinois, 15.60; Huntington, West Virginia, 10.49; Decatur, Illinois, 14.64; Pike County, Kentucky, 5.21; Morgan County, Illinois, 4.19; the New Haven rate was 7.39 per 1,000 population.

Among the urban communities studied, it is seen that New Haven has a relatively low rate. It is interesting to speculate upon the accuracy of this figure. The low incidence rate in New Haven or any other city might be more apparent than real. In other words, there might be a large

number of cases which are not receiving treatment from licensed agencies and which could not, therefore, be included in this kind of enumeration. In New Haven, a drug store canvass made to test this possibility showed considerable but not an unusual amount of drug store treatment and sale of nostrums. Probably about one-third of the total number of cases receiving any kind of treatment were of this class. This was somewhat less than has been found in other places or localities of similar size and composition. Other tests were made without disclosing evidence of an unusually large number of individuals not under treatment. No effort has been made as yet in New Haven to try the effect of an intensive campaign of public information to bring to the clinics and to private physicians those not being treated. It may be that in the large foreign population much ignorance exists in regard to the nature of these diseases and the necessity for proper treatment.

Certain facts are favorable to a belief that New Haven may have an unusually low incidence of venereal diseases. It is in a state which showed a comparatively low incidence of venereal diseases among men examined in the army draft in 1917. A considerable number of the young male population are college students, which group, according to information received from various sources, are relatively free from these diseases. Of the general population, more than half are female, a group generally with low incidence, while in both Detroit and Cleveland, the population is more than 50 per cent male, large numbers of them industrial workers. The Negro population is relatively small and socially and economically well off in New Haven in comparison with the other districts cited. Sex, social status, and economic status are all factors having an effect on incidence.

In the further tabulation of the data collected in the New Haven one-day census, many significant facts were

revealed. Some of them are here summarized. Of the syphilis cases, about 63% were male; of the gonorrhea cases, 86% male. In Cleveland, 61% of syphilis cases were male, and 75% of gonorrhea; in Detroit, 63% of syphilis and 78% of gonorrhea were male; in Atlanta, 57% of syphilis and 58% of gonorrhea were male.

Of the total 1,403 cases, enumerated in New Haven, about one-fourth were acute or early (of all the male cases, 28.2%; of the female cases, only 17.4%). In Cleveland 38% were early or acute; in Detroit, 41%; in Atlanta, 47%. New Haven seemed to have a relatively small proportion of new infections. In New Haven there were many more acute gonorrhea cases than there were early syphilitic infections. Of the total gonorrhea infections, 43.4% were acute; of the total syphilis cases reported, only 13.5% were early. Early syphilis and acute gonorrhea were found in the other cities in the following proportions: Cleveland, syphilis 32% gonorrhea 44%; Detroit, syphilis 35%, gonorrhea 47%; Atlanta, syphilis 43%, gonorrhea 52%. New Haven's proportion of early syphilis was apparently small.

While venereal diseases in general were distributed between physicians, and clinics and hospitals, in about the proportion 60% and 40%, syphilis alone was almost evenly divided between private practice and public treatment. Early syphilis cases, however, were much more frequent in private practice than in clinics, while late cases of syphilis were apparently more widely treated in clinics than in private practice. Gonorrhea cases, both acute and chronic, were treated in private practice four times as frequently as in clinics and hospitals.

To the question included in the questionnaire, "In your experience, has there been an increase or decrease of the venereal diseases of late years, and what have been the

probable causes of such increase or decrease?", 92 physicians made reply. Of these, 17 (19%) believed that there had been no change in the trend of the diseases either upwards or downwards in late years; 14 (15%) thought that syphilis and gonorrhea were increasing; 61 (66%) that they were definitely decreasing.

Various statements were thus made concerning the trend of the venereal diseases, and the reasons for its upward or downward movement.

Those who believed that venereal diseases were increasing named the following factors as influential: lax moral standards, after effects of the War; increase in drinking leading to promiscuity; inadequate prenatal care; and lack of education in the use of prophylaxis. Several doctors believed that the apparent increase was not one so much of actual incidence but rather one of bringing to notice previously unrecognized cases by better diagnostic methods.

Physicians holding the opinion that syphilis and gonorrhea were decreasing attributed the change to the education of men during war-time, more careful habits in sex hygiene, improved medical treatment, decrease in drinking of alcohol, the use of protectors and prophylaxis, better clinical facilities, and the present educational and preventive work of the United States Public Health Service, the American Social Hygiene Association, the American Medical Association, and other health organizations. Several times the statement was made that physicians were seeing fewer cases because the clinics were drawing them away.

3. **Social Factors in the Problem.** As has been pointed out in the introduction to the report of the survey, New Haven has a large foreign-born and native-born-of-foreign-parentage population. Each foreign group has its

own characteristics and tendencies—its superstitions, customs, and habits. Each group, also, has brought with it its own impressions and views in reference to relations between physicians and patients, health in general, clinics, self-treatment, and the corner drug store. These must be taken into account in studying the venereal diseases and social hygiene efforts of New Haven. Especially prepared educational material should be available for use in these groups.

The annual influx of Yale University students adds several additional thousands to the city's population, but the study indicates that although they add to the community's social problems their venereal disease incidence rate is thought to be low and their diagnostic and treatment needs are met by the University department of health or by private physicians.

New Haven has many large and important industries. The economic hazards of venereal diseases are, therefore, of added importance, not only from the standpoint of wage loss, heightened production costs, and inefficiency due to labor turnover, but particularly, in a railroad center, from the standpoint of possible loss of human life and property due to wrecks attributable to paresis. Employers, because of their liability as insurers, are confronted with the question of accidents complicated by the factor of latent syphilis. Such complications often make for delayed recovery, and hence for the payment of increased compensation.

In the study of the extent of promiscuity and the accessibility of promiscuous persons to the general population, every available source of information was sought. These sources included members of the underworld, taxi drivers, keepers of hotels, roadhouses and speakeasies. Among the general population, students, teachers and social workers

were interviewed. Among officials, the Police Department, the courts and the records and reports of institutions were consulted. The information from all these sources may be summarized as follows. Prostitution in the city of New Haven is neither open nor flagrant. Comparatively little solicitation was found to exist upon the streets. Such prostitution as exists is mainly clandestine in connection with rooming houses, hotels and apartments. The most serious situation as regards New Haven apparently centers around the use of the automobile and the roadhouses outside the city. A number of individuals and one or two of the social agencies have studied this latter problem in detail, and are convinced that it is a serious one. One such agency during the year obtained definite names and addresses of 192 girls who admitted sexual misconduct, many of them utilizing the roadhouses and automobiles. Ninety-two were said to be beginners.

As regards the measures in operation in New Haven, both of prevention, protection and punishment, it may be said that good beginnings have been made in all these directions. The city police are active in the suppression of prostitution and other forms of sex promiscuity. The high percentage (75%) of convictions in the City Court, where almost all these cases are disposed of, testifies to the efficiency of the police as gatherers of evidence. It must be remembered, however, that most of the persons brought into the city court are charged with "lascivious carriage" which means, for example, that a couple were found together by the police under circumstances which justified the charge that they had committed fornication or were about to commit it.

The existence and use of such a law obviously renders the task of the police much easier than it is in some other

communities which have no such law and must prove prostitution or the offer to commit it by the testimony of one of the participants or of a policeman who was solicited. The use of the "lascivious carriage" law in New Haven has this advantage also that it enables the police and the courts to deal with men and women equally. This avoidance of sex discrimination by the police and courts of New Haven in dealing with its promiscuous persons is a noteworthy achievement and goes a long way to explain the comparative cleanness of the city from commercialized vice. This condition has been achieved in spite of the fact that the penalties which are meted out by the City Court are often of a kind and degree (small fines and jail sentences) which most other progressive communities have discarded as having no deterrent or rehabilitative value.

The condition of the Court records was such that it was impossible to classify or analyze the work of any one year. It was apparent, also, that the judges had before them, at the time of sentencing convicted persons, a paucity of information as to their histories, and their environments, and also as to their mental and physical conditions. It is perhaps for this reason that probation as a method of treatment is so infrequently used (3% of convicted persons were put on probation in 1926).

The probation officers, particularly in the Juvenile Court, do not, as a rule, visit the probationers or otherwise closely supervise their activities during the probationary period. They are said to devote part time to other duties such as the collection of fines of convicted persons and to collecting support money for the "Department of Domestic Relations." They rely mainly on the periodic visits to their office of the probationer for information concerning the latter's activities.

There is only one woman police officer. She is apparently given discretion in dealing with delinquent girls, and has to spend part of her time in serving warrants and performing various duties assigned her by the Department of Domestic Relations. Several agencies and individuals pointed out the lack of adequate cooperation with voluntary agencies dealing with delinquents and pre-delinquents. They also stressed the need for greatly increased patrol work by women police with adequate training and experience. There is evident need for assignment of such qualified officers particularly in the neighborhood of the University and the High Schools.

The Florence Crittenden Home was found to be receiving a number of girls committed by the court for various offences, as well as girls voluntarily applying for admission. Close quarters in the institution have made it impossible to separate these two groups, with a consequent intermingling and crowding which is considered undesirable.

4. **Educational Problems.** On the question of community understanding of the problems of venereal disease control, it seems fair to say that the importance of adequate public information has not been fully realized by official and voluntary agencies in New Haven. Some pioneer work has been done through occasional lectures, but thus far there has been no adequate community program. But little use has been made of such publicity media as pamphlets, posters, exhibits, motion pictures, and lectures, all of which have been found of great value in other cities.

Interviews were had on the streets with 80 men in various parts of the city to test the current views of young men. The interviewers asked where an infected person might best go to be cured. Fifty individuals advised him to use "home remedies" for self-medication, or to go to drug

stores; some had insufficient information on which to hazard any answer. Of the remaining thirty, nineteen recommended that he go to a physician; and eleven suggested clinics.

The New Haven Library, on Elm Street, contains a fairly comprehensive collection of social hygiene literature accessible to the general public. The Yale University Library, however, at the time of this study, had its social hygiene books restricted or so widely scattered that such reference publications, for example, as "Flexner's "Prostitution in Europe" and the Journal of Social Hygiene were not readily accessible for use, even by students directly interested in sociology, history, community planning, and other related subjects.

It is encouraging to note that sex education—which the United States Public Health Service and many state and city health departments are finding of great value in supplementing their more direct health educational programs —has made a well-grounded start in New Haven. The results of this survey indicate that, while quantitatively the numbers of young people receiving such education through school and church sources are as yet small, the quality and spirit of the work are good. Two hundred senior girls in the high school now receive definite instruction as part of their course in biology; this instruction could readily be extended to all of the seven hundred boys and girls taking biology each year. With tact and careful selection of the teachers such work might now be considered for adaptation, even more generally, in the high schools.

The Young Men's and Women's Christian Associations and Young Men's and Women's Hebrew Associations have cooperated during the past year in five lecture series for men and women. In addition, the Young Women's

Christian Association has instituted a leader-training course under the direction of social hygiene experts.

Several churches have arranged occasional discussions and one church provides for the individual instruction of each child approaching puberty. Through discussion groups for youth, the consideration of questions of social relationships is provided.

Yale University, at present, is giving definite instruction to only the 110 students electing personal hygiene, but the University has a standing committee on sex-education which is studying the advisability of a broader program.

These demonstrations and the response from leaders of other agencies is a further indication that the efforts of a local social hygiene society or division of some existing body would be welcomed.

5. **Medical Care of Venereal Diseases.** The proposal has been advanced in support of health conservation that next to the maintenance of law and order in the State it is the duty of scientific government to endeavor to control endemic diseases, and that for economic reasons alone governments are justified in spending for prevention of such diseases a sum of money equal to the loss which is inflicted upon the people, and that the money so spent should be apportioned in accordance with the amount of illness and mortality caused by each disease; and finally that it is the duty of governments to make and enforce all necessary regulations for the prevention of such diseases, and the duty of the people to comply with the provisions of such laws.

If this proposal be accepted, it is logical for a health department to assign a generous proportion of its budget to activities in cooperation with physicians and voluntary agencies in a program looking toward the prevention and

control of the venereal diseases. In such a program the public health, medical, nursing and related measures which should receive adequate support are:

(1.) Medical advice and diagnosis for infected individuals.

(2.) Treatment for their benefit and for the protection of the public.

(3.) Personal instruction regarding protection of others from infection.

(4.) Social service follow-up measures to keep the patients under continuous treatment or observation and to ensure the protection of the public.

(5.) Requirement of notification of cases to the health authorities under specific conditions adapted to purposes of control and eradication of thee diseases.

(6.) Isolation or quarantine measures applied when necessary because of inability, refusal, or failure of the individual to carry out instructions of the Health Department.

Because of the nature of syphilis and gonorrhea and the frequent lack of readily detected evidences of infection, the primary responsibility for the treatment and control of patients with a venereal disease rests upon the medical profession. For the same reasons the community has an added incentive for discharging its duty to those persons who are not able to pay for the services of a private physician. New Haven has recognized both of these obligations in large measure. The facilities for hospitalization of patients requiring bed care are adequate.

There are two services available for the treatment of persons infected with syphilis or gonococcus infection.

The City Clinic is under the supervision of the Health Department. The New Haven Dispensary is a polyclinic and under the direction of the Medical School. The former has the disadvantages of an isolated clinic; the latter has the advantages of a polyclinic. Neither is operating to the full capacity of many clinics which provide the increased efficiency in diagnosis, care, and preventive effort which might be attainable through some combination of the two.

A careful study of the records shows that neither clinic is carrying an expected normal case load. Average new admissions per annum for both clinics are under five hundred. The study shows further that the type of services furnished by the New Haven Dispensary more frequently meets the needs than does that of the City Clinic. The type of individualized service which is given in the New Haven Dispensary, where a large consultant staff is available, obviously cannot be provided at the City Clinic, because of the difference in the fundamental types of organization.

The case record system of the New Haven Dispensary compares favorably with that of other university clinics of similar high standing, except that lack of a diagnostic file makes it impossible to extract records on specific subjects. The records of the City Clinic were not up to this high average.

Both of these clinics fail to meet the needs for adequate social service and follow-up of their cases.

As has been indicated, there is some evidence that a considerable number of infected persons are attempting to treat their own diseases, either by purchasing from the druggists advertised nostrums, or by having prepared remedies which have been recommended by well-meaning or ignorant friends. In an important percentage of cases,

it was found that druggists were attempting not only to dispense remedies but to diagnose and to prescribe specific treatment.

While the incidence of syphilis and gonococcus infections in New Haven was found to be low in comparison with other cities studied, there is, nevertheless, good reason to believe that greater effort on the part of both official and voluntary health agencies to locate infected persons and to educate the general public in regard to the danger of these diseases and to inform those exposed of available facilities for diagnosis and treatment would discover additional cases and still further strengthen the City's program for the control of these diseases.

No adequate facilities for either diagnosis or treatment are provided at present for two groups which require more attention than has yet been given them, viz., those persons convicted of sex offenses and those committed to the County Jail in connection with their sentences. These groups comprise men and women who have already indicated their disrespect for law and their disregard for the protection of others. They should be given a general examination, including examination for syphilis or gonorrhea, and if infected, should be treated before being given unrestricted freedom.

6. **Appraisal of Community Program.** An attempt was made to evaluate New Haven's activities for the prevention and control of the venereal diseases in terms of the appraisal form devised by the American Public Health Association for the purpose of studying and measuring performance in municipal health work. Under venereal disease control three criteria are named: first, reporting (scoring 12 points); second, clinical service (30 points); and third, cases returned to physicians or clinics (8 points).

The standard for reporting is 400 cases per 100,000 population (New Haven population, 181,907 in 1926). On this basis, 728 reports for venereal diseases should have been received by the New Haven Health Department during 1926, instead of 449 actually received. This gives a rating of 7.4 points out of a possible 12.

The standards for clinical service are first, clinical registration (10 points), 800 registrants per 100,000 population, and second, clinic visits (20 points), 10 visits per new patient registered. On the first of these two standards, the rating would be 5.6 out of a possible 10. This rating is based on an estimated clinic registration of 825 for 1926 (exact figures for all clinics not available) as against a standard requirement of 1,456 registrants. On the second standard, clinic visits, there were 427 new patients registered, while a total of 12,755 visits were made to clinics, thus giving a full credit of 20 points on the basis of 10 visits per new patient as standard.

Under cases returned to physicians or clinics (per cent of cases returned to physicians or clinics after having stopped treatment) the standard is 60 per cent of discontinued cases returned (8 points.) Records of such cases were too inadequate to serve as a basis for computing a rating. The survey showed that follow-up work in clinics was not well organized, and such as was done was not recorded. The amendment to the reporting law (p. 180 of this chapter) should be of great aid in the follow-up of delinquent patients.

Taking all these factors into consideration, on the basis of standards outlined in the Appraisal Form, New Haven would score a rating of 33 out of a possible 50 points allotted to venereal disease control. Even though it may be claimed that this poor showing is partly accounted for

by lack of records on which to compute the necessary figures, the lack of records is in itself a serious commentary on the efficiency of the agencies who should supply them.

7. Recommendations. **Recommendation 37. It is recommended that the social hygiene program of the Health Department, in cooperation with other official and voluntary agencies, be made more comprehensive by making available to selected groups speakers who will give sound information and advice; also by making available to physicians, special groups, and individuals pamphlets and other suitable literature on social hygiene, in various languages; by furnishing physicians and clinic staffs leaflets of instruction on gonorrhea and syphilis to be given patients under treatment; also by the inclusion of motion pictures and other display material on venereal disease control, adapted to special health exhibits; and by making it widely known that personal advice and information service in regard to the venereal diseases is available to all through the health department.**

Recommendation 38. It is recommended that provision be made for a full time Medical Director of Social Hygiene activities in the Health Department.

Recommendation 39. It is recommended that a definite annual program of instruction be developed for both Visiting Nurse Associations and school nurses in problems relating to venereal disease control, for the benefit of new workers and to stimulate interest in those who have been on the staff for more than a year.

Recommendation 40. It is recommended that a determined effort be made by the Health Department to se-

cure more complete reporting of acute venereal disease cases by the medical profession in compliance with the State law:*

Recommendation 41. It is recommended that the two clinic services be combined and operated as part of a well organized polyclinic with provision for the continuance of evening sessions.

Recommendation 42. It is recommended that the private practitioners, the clinics and the hospitals be encouraged to greater efforts to secure the source of infection in all cases of venereal diseases, and that these sources be followed up for the purpose of bringing under observation and treatment infected persons, either by the physician where practicable, or by the constituted health authorities.

Recommendation 43. It is recommended that a sufficient number of trained social workers be provided for the follow-up of patients in clinics treating venereal disease cases. For the best results and the proper correlation of these services in relation to the clinics and hospitals, these social service activities could be more adequately supplied through a special division.

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* The Connecticut Statutes, Chapter 127, Section 2415 of the Revision of 1918, as amended in 1927, states:

> "Every physician shall report in writing every case of cholera, yellow fever, typhus fever, leprosy, smallpox, diphtheria, membraneous croup, typhoid fever. scarlet fever, diseases of a venereal nature or other contagious or infectious diseases occurring in his practice, to the health officer of the town, city or borough in which such case shall occur, within twelve hours after his recognition of the disease, providing in reporting any disease of a venereal nature, the name of the patient suffering from the same shall not be disclosed, *except that any physician who has been treating a case of venereal disease shall report the patient by name, address, age and occupation when the patient shall fail to return for treatment while in the communicable stage of the disease.* Every person who shall violate any provision hereof shall be fined not more than twenty-five dollars."

Recommendation 44. It is recommended that the record systems in the city and juvenile courts be reorganized and extended and that necessary personnel be added. Annual reports should be prepared in which the cases coming before them should be classified and analyzed in detail and the methods and activities of the probation and other court personnel described. A program of activities for employing the leisure time of persons detained at the Children's Building should be established.

Recommendation 45. It is recommended that the state's attorneys for New Haven county and other counties nearby, in cooperation with the state police, should attempt to secure injunctions against the owners and operators of disreputable road houses accessible from New Haven and have them abated as public nuisances as provided in Section 2705, Rev. 1918. Criminal action might also be taken against some of these places, and the owners or drivers of cars who visit them under Chapter 77 of Acts of 1919.

Attention is also invited to the new Massachusetts Road House Law (Chapter 140, Section 182, as amended by Chapter 299, Acts of 1926; and Sections 183A, 183B, and 183C as enacted by Chapter 299, Acts of 1926). Under this law all road houses must be licensed under terms and conditions satisfactory to the licensing authorities. In towns having less than 2,500 registered voters, the license must be approved by the State Commissioner of Public Safety. Such licenses may, after notice, be suspended and, after hearing, revoked. Severe penalties for operating without a license or for violation of the terms of the license may be inflicted by the courts.

Recommendation 46. It is recommended that provision be made for at least six police women whose qualifications

should equal the minimum proposed by the Committee on Qualifications of the International Police Women's Association.

Recommendation 47. To aid in carrying out the recommendations contained in this report, it is recommended that a New Haven Social Hygiene Society or Committee be organized as soon as may be practicable, or set up as a major division of some existing agency. Such an agency is particularly needed in New Haven (a) to help in coordinating the many worthy social activities now being carried on, (b) to support the Health Department in its efforts for a comprehensive venereal disease control program, (c) to cooperate with the officials in the enforcement of laws against prostitution, (d) to promote an informed public opinion on the social hygiene problems of the community, and (e) to serve as a clearing house for information, discussion, and action on these problems. Such a society, because of the prestige of the city and university, and because of the close contact that can be planned between the local society and the national association, has possibilities of making New Haven an outstanding example of community development in the social hygiene field.

In addition to the above recommendations the study indicates that consideration might well be given to the following suggestions:

It is suggested that the Health Officer and the Public Health Committee of the New Haven Medical Society might collaborate further in preparing a joint social hygiene program for close cooperative efforts of physicians and department staffs in this field of public health endeavor.

It is suggested that greater attention should be given by the probation staff of the city to social hygiene prob-

lems. Consideration of this matter, however, may involve an increase in personnel and reorganization of their assignment and direction.

It is suggested that the visiting teachers' service might likewise be increased with advantage under the direction of a specially trained and experienced visiting teacher, unless the same end can be attained through some existing home visiting agency.

It has also been suggested that a study should be made of the influence of vocational guidance available under the direction of an experienced and trained director in the public schools.

It is suggested that consideration should be given to a return of the Florence Crittenden Home to the function of caring for unmarried mothers and pregnant girls voluntarily admitted, with the transfer of committed girls to some other institution.

The detailed divisions of the report and source material on which this general statement is based will be filed with the Community Chest for study and reference. These divisions are I. Informational Measures, II. Educational Measures, III. Legal and Protective Measures, IV. Medical Measures.

Chapter XV.

MATERNAL AND NEONATAL MORTALITY.

1. **Birth Statistics of New Haven.** For purposes of comparison with current mortality rates we have in other chapters used the statistics of fifty years and twenty years ago. Similar data for birth rates and general death rates in New Haven are presented below.

BIRTH RATES AND DEATH RATES IN NEW HAVEN.
(Per 1000 Population).

Years	*1876-8*	*1906-8*	*1924-6*
Birth Rate	33.9	27.5	21.5
Death Rate	19.4	17.9	12.2
Difference	14.5	9.6	9.3

It is evident that during the period from 1877 to 1926 the birth rate of New Haven fell even faster than its death rate, so that the net increase in population (due to excess of births over deaths) is now only two-thirds of what it was half a century ago.

This is of course a world-wide and universal problem and one which may be regarded with equanimity except in such nations as still yearn for "cannon-fodder" in the interest of aggressive nationalism. Furthermore, during the past twenty years the decline in the death rate has practically caught up with that of the birth rate.

If we proceed to our analysis of certain specific factors in the death rate which are closely associated with the problem of child birth we find again some cause for satisfaction, combined with evidence that still greater gains in the prevention of preventable disease may be anticipated.

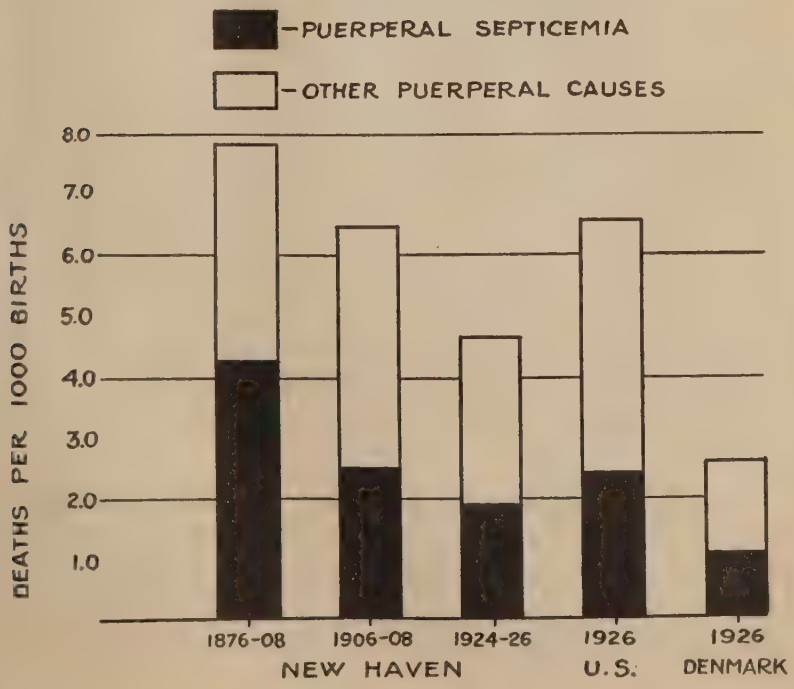
Childbirth should be a normal process, not a disease, and the fact that it is still so often fatal is one of the out-

standing reproaches to our civilization. New Haven has, however, made substantial progress in dealing with this problem as indicated in the table below.

DEATH RATE FROM PUERPERAL CAUSES.
(DEATHS PER 1000 BIRTHS).

	New Haven			*U. S. Birth Reg. Area*	*Denmark*
	1876-8	*1906-8*	*1924-6*	*1926*	*1926*
Puerperal Septicemia	4.3	2.5	1.9	2.4	1.1
Other puerperal causes	3.6	4.0	2.8	4.1	1.5
Total	7.9	6.5	4.7	6.5	2.6

FIG. 1. DEATHS IN CHILDBIRTH



The puerperal death rate in the United States as a whole is seen to be abominably high, as indicated by the 1926 figures for the Registration Area which are the same as the rate for New Haven twenty years ago. Our local rate has now been reduced to 60 per cent of what it was half a century ago but is still nearly twice as high as the rate for Denmark, the country which has the best record in the world in this respect.

Closely allied to the maternal mortality rate and essentially due to the same factors, is the health rate of infants during the first month of life from the group of so-called congenital causes. The classification of causes of death fifty years ago was too inaccurate to make comparisons in this respect possible; but twenty years ago the mortality from these diseases of early infancy was 48 per 1000 births (average of 1906-8) while in 1924-6 it fell to 30 as against a rate of 34 for the Registration Area. For the years 1918-21, 35 infants out of every 1000 born died within the first month of life while for the year 1927 (a preliminary analysis for which has just been completed) the rate rose to 39. In Amsterdam the mortality rate for the first month of life has been reduced to 13.

New Haven, as in other respects, has made substantial progress in the reduction of maternal mortality and mortality of infants during the first month of life,—progress distinctly better than that which has been made in the United States as a whole. Much, however, still remains to be done.

2. **The Program for Reducing Maternal Mortality.** The mortality of mothers in childbirth and the mortality of infants from the so-called congenital causes, during the first month of life, are due to two sets of factors,—operating respectively before and at the time of birth. They

are due either to the impaired physical conditions of the mother during the period of pregnancy or to poor obstetrical care. Our program of control must therefore concern itself with prenatal service and good obstetrics; and it is along these two lines that our program in America has been deficient in the past and it is here that we must progress in the future if we are to control maternal and neonatal mortality.

3. **Prenatal Conference Service.** The first essential in a program of maternity hygiene is to provide effective machinery for the supervision of the health of the expectant mother. This demands that she should be brought, as early as possible in the period of pregnancy, in contact with a physician who will make,—and will repeat at frequent intervals up to the time of delivery,—physical examinations to detect abnormalities which require attention and who will give the necessary hygienic advice as to the rules of personal hygiene (adequate diet, avoidance of overstrain, etc.) necessary to keep the mother in the best of physical condition.

In order to attain this end, there are at present four prenatal conferences operated in New Haven, one by the New Haven Dispensary (under Dr. A. H. Morse), one at Grace Hospital (under Dr. H. B. Perrins) and two by the Visiting Nurse Association (under Dr. Margaret Tyler). One of the latter is held at Christ Church Parish House, 94 Broadway, the other,—generously supported by the Junior League and known as the Junior League Clinic,—at 519 Ferry St.

The character of these conferences is entirely admirable but there seems to us a certain technical objection to the plan under which medical service for such conferences is

provided by the Visiting Nurse Association. It is very common for nursing organizations to provide medical service for such conferences and in the present instance Dr. Tyler is probably the one person best suited for the task; but in theory it seems sounder that medical appointments should be made by an official medical institution rather than by a board primarily interested in nursing. It would seem proper to ask the Board of Health to assume responsibility for the medical appointments in question, with the counsel of an advisory group of obstetricians.

The volume of prenatal conference service rendered in New Haven is also admirable as compared with generally accepted standards. In the year 1926 the Junior League clinic had not been opened. During that year 865 visits were paid to the New Haven Dispensary Conference, 671 to the Visiting Nurse Association conference and 236 to the Grace Hospital conference or 1772 in all. The Appraisal Form standard calls for 250 visits per 1000 births which would correspond to but 925 visits so that New Haven has a figure nearly double the quota. This quota, however, is altogether too low in comparison with the real needs of the case. Actually 217 prenatal patients attended the Visiting Nurse Association conferences and 301 the Dispensary conferences or 518 in all,—only one-seventh of the pregnant women in New Haven. We believe that one of the most important problems of the future is the considerable expansion of this service.

4. **Pre-Natal Nursing.** In the field of prenatal nursing the Visiting Nurse Association is again doing a remarkably extensive work. During the year 1926 the nurses of the Association made 4299 prenatal visits to 391 patients, and nurses attached to the Dispensary obstetrical service made 1131 visits to 301 patients,—in all 5430 visits to 692 pa-

tients. The Welfare Nurses of the Health Department also do some prenatal visiting. Even the figure for the V. N. A. Service by itself is well in excess of the standard of one visit per birth (3698) set by the Appraisal Form.

It seems on the whole undesirable to interfere with the general program of generalized home nursing service by sending nurses from the Dispensary staff into the homes. It would, we believe, be productive of economy and efficiency, if all follow-up of the New Haven Dispensary Conference were placed in the hands of the Visiting Nurse Association to conduct as they conduct the follow-up for the other two clinics. It would be necessary if this were done, however,—and it seems in any case essential for the best prenatal nursing service,—that the Visiting Nurse Association nurses (whenever physicians in charge do not object) should make blood pressure observations and urine tests on all prenatal cases visited. A special course of instruction should of course first be provided to perfect them in their technique.

5. **Obstetrical Service.** The second important element in the control of maternal mortality is good obstetrical care, which means intelligent cooperation with,—not radical interference with,—the process of delivery. It is a fact worthy of note that the countries, like Denmark and Holland, where maternal mortality is lowest are the countries where the midwife is most extensively used and most carefully trained and supervised; but it is our belief in America that even better results will ultimately be secured by really expert medical obstetrical care assisted by the graduate nurse. We are inclined therefore to measure the success of our program by the degree to which midwife practice is eliminated and the degree to which hospital deliveries are increased.

New Haven has for years enjoyed a high quality of obstetrical service and as a result considerable progress has been made along this line. In the year 1926 the attendance at delivery was as follows:

Type of Attendance at Delivery.	*Per cent of Births.*
Midwives	14
Physicians in Homes	40
Physicians in Hospitals	45

At Grace Hospital there were 653 births, at New Haven Hospital, 477, at St. Raphael's Hospital 452 and at various small hospitals and nursing homes, 148.

Midwives are registered by the State Department of Health and supervised and instructed by the city Department as well. There were 26 of them licensed to practice in New Haven in 1926 but only half of these are in active practice.

The proportion of all the births in the city occurring in the three general hospitals has risen steadily from 21 per cent in 1917 to 41 per cent in 1926, an excellent record. It is just over the quota of 40 per cent called for by the Appraisal Form. It would be highly desirable, however, to increase this figure still further. Many western cities reach a figure of 75 per cent of all births occurring in hospitals, and Hartford has a ratio of 70 per cent, a highly desirable situation, since it is only in a well-equipped hospital that ideal delivery service can be provided.

A particularly admirable factor in the local situation is the home obstetrical service provided free or at cost of transportation by the staff of the Department of Obstetrics of the New Haven Hospital, which makes it possible for the mother who cannot for any reason go to the hospital to obtain the best of expert care.

6. **Obstetrical Nursing.** One real lack in the New Haven machinery for maternity care has been the absence of obstetrical nursing service in the home, except that provided by the New Haven Hospital for the home delivery service just described. Whatever we may think of the desirability of more general hospitalization of obstetrical cases, a considerable proportion of such cases will always be cared for in the home. Indeed no great addition to the 1600 obstetrical cases now hospitalized each year is possible without expansion of existing hospital facilities for this class of cases. With over 1500 cases a year delivered by private physicians in the homes there is a natural and proper demand for visiting nurse service,—in this as in other conditions requiring nursing care.

In the years 1920-23, the Visiting Nurse Association did operate a delivery service which was later adandoned on account of lack of funds. The Community Chest has recently agreed to provide an appropriation for the resumption of this work but has wisely provided that nursing service for obstetrical cases shall be free only when medical service for such cases is also free. There is danger that a delivery service operated without adequate safeguards may actually do harm by encouraging poor obstetrics and the restriction imposed by the Chest cannot work any hardship since free home medical service from the staff of the hospital is always available. With this provision the resumption of delivery service by the Visiting Nurse Association should form a most valuable element in the community health program; and the service thus provided might naturally and properly cover the home obstetrical service now provided by the Yale School of Nursing.

7. **Post-Natal Care.** As a final step, the Visiting Nurse Association continues its supervision of the maternity case

on into the post-natal period; and in 1926, 913 cases of this type were discharged, with an average of 11 visits per discharged case.

8. **Summary and Recommendations.** It is evident that the New Haven program for the control of maternal and neonatal mortality is already far above the average. On the Appraisal Form standards it obtains a perfect score of 75 points (30 for ratio of prenatal nursing visits to homes, 25 for ratio of visits to prenatal conferences, 8 for supervision of midwives and 12 for hospitalization). The results obtained are equally notable, since both maternal mortality rates and mortality rates from diseases of early infancy are now substantially lower than those for the registration area as a whole.

Nevertheless there is still more to be accomplished if New Haven is to approach the results attained in such foreign cities as Copenhagen and Amsterdam. The following readjustments and expansions, none of them involving additional expenditure except in so far as an increase in the staff of the Visiting Nurse Association may be ultimately involved, would we believe assist materially in attaining such an end.

Recommendation 48. That the responsibility for the appointment of medical staff for the prenatal conferences of the Visiting Nurse Association should be transferred to the Department of Health, to be exercised with the aid of an advisory group of obstetricians.

Recommendation 49. That the home nursing service in connection with the obstetrical service of the New Haven Dispensary be carried by the Visiting Nurse Association, if a mutually satisfactory agreement between the two organizations can be reached.

Recommendation 50. That the staff nurses of the Visiting Nurse Association be trained in the technique of blood-pressure readings and urine tests and make such tests and readings on all prenatal cases unless the physician in charge prefers this should not be done.

Recommendation 51. That special efforts be made to increase the volume of prenatal conference work and to promote a further increase in the number of deliveries which take place in hospitals and under the care of expert obstetricians.

Chapter XVI.

INFANT HYGIENE.

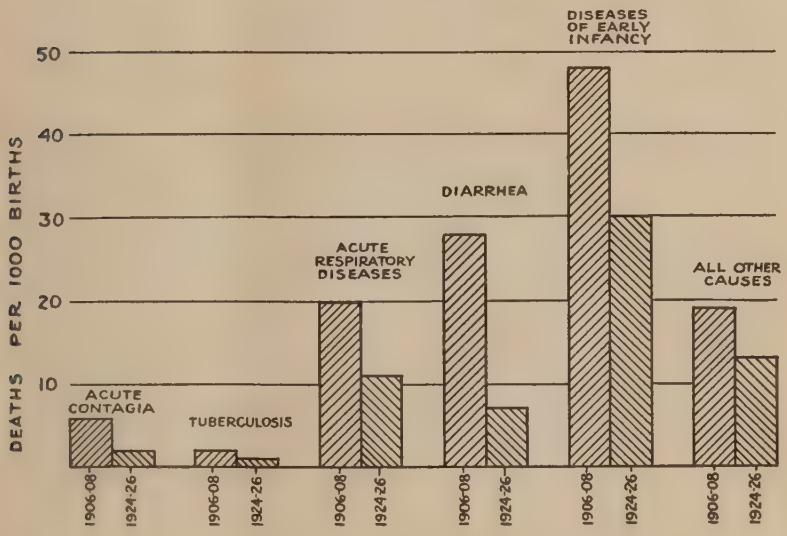
1. **Infant Mortality in New Haven.** Fifty years ago the infant mortality of New Haven was 127 (average of 1876-8), which means that out of 1000 babies born, 127 died before completing the first year of life. Twenty years ago the infant mortality rate was approximately the same (123 for 1906-8). In 1924-26, however, our infant mortality rate had fallen to 65 (substantially lower than the rate for the Registration Area which was 72 in 1925); and for 1927 preliminary figures indicate that the rate will be 54, a truly remarkable result for a large industrial city. Whereas one baby out of 8 died during the first year in 1906-8, only one out of 19 died in 1927.

In the figure and table below, these rates are analyzed by causes and it will be noted that acute contagious diseases have decreased by 67 per cent, tuberculosis by 50 per cent, acute diseases by 45 per cent and diarrheal diseases by 75 per cent, while the other two items, diseases of early infancy and all other diseases have only fallen by 37 per cent and 31 per cent respectively. The last two groups include conditions which for the most part are due to prenatal causes and to factors relating to child birth itself. They can be dealt with only by the measures discussed in the preceding chapter. On the other hand the first four causes listed,—which have decreased by from 45 to 75 per cent,—are causes chiefly environmental in origin which are being controlled with remarkable success by infant welfare nursing and clinic service.

During the year 1927, while the infant mortality rate for the first month was 39 per 100 births, the rate

for the other eleven months was only 14 per 1000. The figure for the second to the twelfth month is as good as the rate attained in such countries as New Zealand where the best infant mortality work in the world is done. It is a record of which New Haven may be proud. The rate

FIG. 2. INFANT MORTALITY RATES BY PRINCIPAL CAUSES NEW HAVEN



for the first month and hence for the year as a whole can, however, still be improved. In 1925, out of 66 cities of 100,000 population listed in the Census Report on Infant Mortality, New Haven stood near the bottom of the upper third of the cities, with a rate of 66. Twenty cities had lower rates, Portland Ore., Salt Lake City, Seattle and Tacoma having rates under 50.

INFANT MORTALITY RATES BY PRINCIPAL CAUSES.
(Deaths of Infants under One Year per Thousand Births)

Cause	*New Haven* 1906-8	1924-6	*Birth Registration Area 1925*
Acute contagia	6	2	4
Tuberculosis	2	1	1
Acute respiratory diseases	20	11	10
Diarrhea	28	7	11
Disease of early infancy	48	30	35
All other diseases....	19	13	11
Total	123	64	72

2. **The Infant Welfare Conferences.** The central factor in the program for the control of infant mortality after the first month of life is the child welfare conference and such conferences have for some years been conducted in an admirable fashion under the direction of the Visiting Nurse Association. During the year 1926 fourteen such conferences were held every week at thirteen different stations in various sections of the city. These conferences receive children up to 2 years of age and during this year there were 18,358 visits made to them. Nurses and nutrition workers devoted 6818 hours to these conferences during the year.

The medical staff for the conferences is a part-time one, the physicians being paid $3 an afternoon by the Visiting Nurse Association for the time devoted to this task. Dr. J. I. Linde is the official head of the staff and appoints its other members.

While Dr. Linde has rendered a remarkable public service in building up this work, and might profitably guide it under whatever auspices it should be conducted, it appears unsound in principle that medical service of this kind

should be administered by a nursing organization. The Visiting Nurse Association has chosen most wisely in this case but the responsibility for medical service should properly be borne, here, as in the case of the prenatal conferences,—by the Health Department. In this particular instance, the Health Department leadership would seem particularly indicated since the promotion of child health (like the campaign against tuberculosis) should form an integral part of the whole community health program. It would seem entirely proper that the Board of Health should make itself responsible for the medical service at these conferences and should pay the cost of such services, freeing the sum paid by the Visiting Nurse Association for this purpose ($2814 in 1926) for the additional nursing services which are needed along certain special lines.

If the Board of Health should assume this function it might well be carried out under the able direction of its present head, whose experience and prestige would be invaluable, but more of the actual service might best be rendered by physicians devoting themselves chiefly to this specialty. Such a service could no doubt be obtained by a cooperative arrangement between the Board of Health and the Dispensary such as has been worked out in the case of tuberculosis.

3. **Infant Welfare Nursing.** In addition to their work at the conferences the staff nurses of the Visiting Nurse Association devote a large share of their time to home visiting on behalf of infants. In 1926, 2283 infants were admitted to this service, (29 per cent of all admissions) which means that nearly two-thirds of all babies born in New Haven are coming under the care of the Visiting Nurse Association. The work is conducted under the general di-

rection of a skilled special supervisor and the whole program is admirably carried out. The volume of the work performed in relation to the appraisal standards, is, as will be pointed out in a later paragraph, very high.

4. **The Welfare Nurses of the Health Department.** While, as we have seen, the child welfare program as a whole is carried by the Visiting Nurse Association, the Health Department employs three Welfare Nurses (and a fourth has recently been added to the staff) who perform somewhat similar functions. These nurses inspect and supervise the 26 midwives practicing in the city; they deliver copies of birth certificates at the homes of new-born babies and make subsequent visits to such homes for purposes of instruction. In 1926 the three nurses delivered 2630 birth certificates and made a total of 6722 visits on behalf of babies. The general policies which underlie this problem of infant welfare nursing will be discussed in a succeeding chapter. (XX.)

5. **Supervision of the Health of the Child of Pre-school Age.** It is nowadays recognized as most important that general health supervision, though on a less intensive scale, should be continued for the child between the ages of 1 and 5 years. This too, has been admirably cared for by the Visiting Nurse Association which conducts nine weekly Pre-school Conferences in different sections of the city for children between 2 and 5 to which 2613 visits were made in 1926. (Children between 1 and 2 are registered at the Infant Welfare Conferences.) Home follow up is also carried on, visits being made on the average about four times a year, instead of twice a month in the case of the infant. Dietitians, as well as doctors and nurses are in attendance at these conferences.

6. **Comparison of Volume of Work with Appraisal Form Standards.** It has been a little difficult to compare the work done in New Haven with appraisal form standards because the Visiting Nurse Association records have in the past dealt with children under 2 as infants and with those from 2 to 5 as of pre-school age while the Appraisal Form draws the line at one year instead of 2 years. During 1927, however, records have, at our request, been kept on the Appraisal Form basis and the following data have been obtained by applying the ratios of children under 1 to children under 2 for 1927 to the 1926 figures. The values are all so far in excess of those called for as to make it obvious that New Haven must have a full score on this aspect of its work.

APPRAISAL SCORE ON INFANT AND CHILD WELFARE. NEW HAVEN, 1926.

		Quota.	*Accomplishment.*	*Score.*
Infants.	Nursing visits.....	14,792	31,646*	35
	Clinic visits.....	9,245	13,990**	35
Supervision of Baby Boarding Homes		Provided under State		5
Preschool.	Nursing visits.....	3,601	35,868**	25
	Clinic visits.....	910	6,111**	25
				125

7. **The Community Center and Other Agencies Dealing with Child Health.** It is impossible to discuss here in detail the work of the many other agencies dealing directly or indirectly with problems of child health. Mention should however be made of at least a few of the more important ones.

The New Haven Dispensary and the three hospitals of course offer excellent pediatric services.

* Includes 24,924 estimated as visits paid to infants under 1 by Visiting Nurse Association plus 6,722 visits paid by Health Department nurses.

** Corrected by transferring 20 per cent of visits under 2 years to preschool group.

The Children's Community Center on Whitney Avenue is an admirably arranged and admirably managed model institution which provides a temporary home for orphan, dependent and neglected children. During the year 1926 it cared for an average of about 100 children at the Home itself and for 150 more in supervised foster homes. (During 1927 the latter figure rose to 190). Half of these children were under 6 years of age and nearly one-third of them under 3 years of age. The Center has at the Whitney Avenue headquarters an infants' building with 38 beds, a reception building with 26 beds, a children's building with 24 beds and a building for convalescent children with 24 beds. Cardiac and orthopedic cases make up the bulk of the patients in the latter cottage. Special attention is given to the problem of nutrition under a dietitian who is a Pratt Institute graduate and a highly trained supervisor of nursing supervises the younger children placed in homes, and carries a general program of foster-parent education. During the year 1926 the total receipts of the Center amounted to $137,725.63, of which $46,130 came from the Community Chest, $43,795.63 from endowments and $34,-812.21 from payments by parents and organizations.

Baby boarding homes are licensed and supervised by the State Bureau of Child Welfare. There are 15 such licensed homes in the city, with one more license pending.

8. **Summary and Recommendations.** In general, New Haven's program for the welfare of infants and children of preschool age seems admirable and needs only to be carried on along its present lines.

We would suggest, however, as

Recommendation 52. That the appointment and payment of physicians for Infant Welfare and Preschool con-

ferences should be turned over by the Visiting Nurse Association to the Health Department if a satisfactory plan can be worked out involving the maintenance of the general policies now followed, with a possible concentration of service in the hands of specialists in the field of pediatrics.

Chapter XVII.

HEALTH SUPERVISION OF CHILDREN OF SCHOOL AGE.

With the cooperation of Ira V. Hiscock,
Assistant Professor of Public Health, Yale School of Medicine.

1. **Organization and Problem.** School health supervision has become recognized as an important part of the school and public health program of New Haven. The responsibility for this work rests jointly with the Board of Health, and the Board of Education. The Board of Health provides for medical, nursing and dental service, while the Board of Education has charge of physical education, nutrition work, and special classes, and cooperates with the Board of Health in carrying out the entire program. The superintendent of schools and the health officer, as a committee on school health work, are endeavoring to secure a well coordinated program for the city as a whole.

The city has 64 public schools, including 2 high schools, 4 junior high schools and the Boardman Trade School, in addition to 9 parochial schools and 30 private schools. The entire school registration totals 32,515 children in public schools, (5,759 high school), 4,046 children in parochial schools, and 4,796 children in private schools. There are 1,117 teachers in the public schools. The problem is then to provide adequate facilities for (a) the discovery and early correction of handicapping defects; (b) the education of pupils in the principles of healthy living; (c) the prevention of communicable diseases; and (d) the conduct of school work in a favorable sanitary environment so that maximum benefits may be derived both mentally and physically.

2. **Health Department Program.** A. **Staff.** The staff of the health department engaged in school work in both the public and parochial shcools consists of two full-time physicians, 13 school nurses, 3 dentists, 5 dental hygienists, and a stenographer. On the basis of the above registration figures, there is one physician for about 15,000 pupils, with one nurse for about 2,400 pupils, exclusive of the high schools.

B. **Medical Program.** Until September 1926, the time of one physician, Dr. McGuire, was spent in physical examinations and in other routine school health activities. A second physician, Dr. Boardman, was engaged in carrying out the special program of diphtheria immunization discussed in the chapter on communicable disease control. A considerable step in advance was made when it became possible, with the opening of school in the fall, to have two full time school physicians to carry on the regular work and to include in their program the diphtheria prevention. The city was then divided into two parts so that each physician has about the same number of schools and children. The schools have been so grouped that each physician spends 8 weeks in 8 schools, approximately one half day a week being consumed in each school. During this time regular examinations are made and toxin-antitoxin is administered to all applicants with request slips, including babies and pre-school children.

The school health program includes both the public and the parochial schools, with the exception of the junior high and high schools. All children of the first and third grades and the newcomers to the second and fourth grades are given physical examinations once each year. The school physician has not the authority to have the pupil's clothes removed, so that proper examination of the heart and lungs

and examination for orthopedic deformities are not possible unless the parent is present or gives permission. Furthermore, the medical personnel for child hygiene work is at present too limited to allow enough time for thorough physical examinations of the pupils enrolled in the grades examined. For a complete physical examination by a physician, including heart and lungs, at least 8 to 10 minutes will be required. At present, less than half of this time is usually allowed for this purpose.

Modern standards of school health supervision indicate that thorough physical examinations should be made at least three times during the school life. This is certainly not too high a standard. Such a practice, however, would require more medical personnel than is at present available in New Haven. It is our opinion, however, that it is better to attempt two thorough examinations during the child's school life than to make three examinations which would necessarily be superficial because of lack of time. From experience in other cities, we are inclined to believe, that a better time of examinations would be in the first and fifth grades, with examination of newcomers in the second and fourth grades instead of the present practice of examining routinely the children of the first and third grades. According to the present plan, whereby the last routine examination is given to children of the third grades, there is no adequate provision for finding defects which occur after this period. Experience shows that the children of the fourth and fifth grades often present problems of physical defects which need correction. In order to cover the school curriculum more completely, therefore, and to provide more adequately for children in the later grades, it is suggested that until the time when more than two complete physical examinations in a child's school life are possible, with the personnel available, these examinations be made in the

first and fifth grades. If, and when, funds are provided to add to the staff so that a third physical examination is possible, present experience would suggest that this examination should be made about the time the child becomes 12 or 14 years of age.

Records of the defects discovered are maintained, although it is believed that these records might well be more complete. Parents are notified of the findings and are urged to have handicapping defects corrected by their physicians or dentists if possible, as the condition indicates. The results of the examinations and the reasons for correction are also explained by the school nurses in their home visits. When parents are unable, for financial reasons, to secure the correction of defects by their own physicians, they are given an opportunity to take their children to special clinics at the New Haven Dispensary.

The results of examinations and follow up of 12,511 children of the first four grades in 1926 follow:

PHYSICAL DEFECTS FOUND AND CORRECTED—1926.

Condition.		*Treatment.*	
Teeth requiring:		Teeth:	
Filling	9,307	Filled	10,002*
Extraction	7,718	Extracted	7,718
Cleaning	16,600	Cleaned	16,600
Eyes defective	3,028**	Fitted with glasses	587
Hearing defective	17	Treatment and instruction	30
Nose or throat defects	873	Operation for removal of adenoids or tonsils	481
Heart defects	84	Placed under physician's care	84
Lung defects	40	Placed under physician's care	40
Skin defects	277	Corrected	277
Glandular defects	239	Under treatment	239
Orthopedic defects	143	Under treatment	160

* 695 children of grammar grades had teeth filled by private dentists.
** Teachers' examination includes those which were wearing glasses.

In many respects this is a commendable showing, so far as the correction of defects is concerned, and indicates the effectiveness of home follow up by the nurses and the response of parents. The results of the dental program, according to the above data, are particularly gratifying. A large proportion of the dental defects were discovered by the dentists and dental hygienists. Besides the examination of the children above noted, a total of 157 boys and girls of the high and trade schools were examined for special reasons at the request of these schools. There were 758 pupils treated at school clinics, while in 2,761 cases, parents were advised to provide medical attention. No medical examination is required of, or given to, school teachers, and only a few medical examinations are made of children of the high and junior high schools. There is need for the development of a more complete health service for the junior high and high schools, and teachers should be urged to have regular annual physical examinations.

The physical examination is primarily an educational experience for parent, teacher, nurse and child. It is most desirable that the parents be present, and this will often provide the first opportunity for the parent to understand the nature and significance of a health examination as conducted by an interested and well trained physician. In Toronto, Canada, among other places, the plan of inviting parents to be present during the physical examination has proven successful and helpful. Such a practice would prove of considerable benefit in New Haven.

In addition to the routine examinations, the physicians are on call for emergency cases (22 in 1926), such as accidents and suspicious communicable diseases. During the summer, vaccination clinics were established for the benefit of the children who were about to enter school, and 3,002

children were vaccinated. Special physical examinations were made of the children of the open air school. In all, 6,888 children were protected against diphtheria.

Besides the work with the school children, an inspection is made of the school rooms, relative to heat, ventilation and sanitation, and unsatisfactory conditions found are brought to the attention of the janitor and principal.

C. **Causes of Absenteeism.** One measure of the effectiveness of school health work is a consideration of the days of school lost through sickness. The report of the Superintendent of Schools shows 416,701 half day absences. A commendable record of attendance for the year of 91.4% is also recorded. During the past year it has been possible to study in considerable detail the problem of absenteeism (3 days or longer) as a result of sickness, with the causes. Mr. C. C. Wilson of the Yale School of Medicine, who has conducted this study in cooperation with the health department and the department of education, has submitted a very interesting abstract of these findings.

Absence from school is a factor hindering the regular progress of the educational program, and the main reason for absenteeism is sickness. A record kept of absences among the public school children of New Haven shows that from January 1, 1927, to June 15, 1927, there were 9,033 cases of sickness of three days or more in duration. The total number of days of sickness among these 9,033 cases amounted to 89,603, or 9.9 days per case. The most frequent cause of sickness among these children was colds, causing 3,236 different absences and 24,973 days of sickness, or an average of 7.7 days per case. Following colds, disease of the throat was the next most frequent cause of sickness. This group, which includes sore throat, tonsillitis and adenoid and tonsil operations, caused 1,802 cases of

absence of three days or more in duration, and a total of 15,222 days of sickness. The third greatest cause of absence was due to a group classed as "Other respiratory diseases," which includes bronchitis, pneumonia and influenza. This group was responsible for 1,340 cases and 15,631 days of sickness.

These three groups of sickness, colds, diseases of the throat, and "other respiratory diseases" were responsible for 70% of the cases of absence and over 60% of the days of sickness.

SICKNESS OF THREE DAYS OR MORE IN DURATION AMONG PUBLIC SCHOOL PUPILS OF NEW HAVEN, JAN. 1, 1927 TO JUNE 15, 1927.

	Cause of Sickness.	*No. of Cases.*	*No. of Days of Sickness.*
1.	Colds	3,236	24,973
2.	Disease of Throat	1,802	15,222
3.	Other Respiratory Diseases	1,340	15,631
4.	Diphtheria	7	164
5.	Chicken Pox	406	6,410
6.	Measles	34	458
7.	Mumps	127	1,940
8.	Whooping Cough	17	790
9.	Scarlet Fever	56	1,859
10.	Disease of Eye	183	1,528
11.	Disease of Ear	195	2,626
12.	Toothache and Disease of Teeth	167	1,199
13.	Disease of the Digestive Tract	322	3,307
14.	Disease of the Skin	223	2,558
15.	Accidents and Injuries	275	3,089
16.	Other Sickness e. g., boils, headache, typhoid fever, etc.	643	7,849
	Totals	9,033	89,603

D. **Nursing Program.** The group of 13 school nurses, under the supervision of Miss Margaret Barrett, assisted the school physicians with the physical examinations and carried on other phases of school nursing work. Certain

aspects of the school nursing problem will be discussed in the chapter on public health nursing, but it seems desirable to outline here briefly the work of the school nurses and its relation to the school program as a whole.

Records were made of the physical examinations by physicians, and letters were sent home to notify parents of 5,022 physical defects. During the year, 2,183 physical defects were corrected in addition to the dental conditions treated by school dentists. Many children are placed under care at the New Haven Dispensary, in the heart, special medical, mental hygiene and orthopedic clinics, or under the care of the Crippled Children's Aid Society.

Children absent from school 3 days or longer must secure a permit or certificate from the school physicians or nurses before re-admission, and 11,811 such permits were given by the nurses. These children are carefully inspected for symptoms of communicable disease. The nurses have also assisted in the control of communicable diseases by regular classroom inspections. These were continued daily in about 20 different classrooms, which means that about 1,000 children were inspected daily for symptoms of communicable disease and personal hygiene. As a result, 2,669 pupils were recommended for exclusion for such symptoms as a rise in temperature, a sore throat, suspicious rash, or some other condition which gave evidence of illness. These children obviously should not be in school, both for their own sake and for the protection of others. Arrangements are made with principals and teachers so that the time when a nurse is to be in her office in the schools is known.

In connection with the diphtheria immunization campaign, special effort has been made to reach the pre-school children, as well as the children of the kindergarten and

first grade. Of the many methods used, perhaps none was more effective than the talks given by school nurses to older pupils. These pupils in turn took the message home to their parents and often assisted in bringing the babies (1,725) to school for immunization. There is an excellent opportunity for extending the nursing program to the junior high and high schools. Nurses selected for this work should be specially qualified by training and experience, with ability for teaching as well as for nursing supervision.

Careful follow up work by nurses in the home is important to insure the correction of physical defects and the formation of correct health habits. The school nurses made 7,207 visits to homes during the year for these purposes. It is required that all nurses appointed to this staff shall be graduate nurses, registered in the State. There is no definite program of education in school nursing, however, and practically all of the nurses have been trained in the school of experience, so far as the specialty of school hygiene is concerned. Routine directions as to technique in individual and class instructions are followed and regular weekly conferences are held with the supervising nurse.

E. **Dental Program.** The school dental program has apparently been well organized with a reasonable balance of dentists and dental hygienists. Each of the three dentists establishes headquarters with a portable equipment at a school from which point he serves all schools in the immediate vicinity. With the consent of parents, reparative work, including cleaning, is done in the first three grades. Attention is given to both temporary and permanent teeth, with the exception of root canal fillings and the treatment of permanent teeth. Abscessed and temporary teeth are extracted when this action seems necessary.

Pupils who need to have permanent teeth extracted are referred to private dentists or to the New Haven Dispensary. Instructions in the care of the teeth are given to each child treated. In schools where dental hygienists are located, after their work is completed, the dentist is called upon to extract temporary teeth needing removal. When the work of the first three grades in a district has been completed, the dentist's equipment is moved to the center of another group of schools. Emergency work for the pupils of the higher grades is handled as the occasion arises.

During the summer, the dentists work in the summer schools and care for all children of these schools regardless of age. They also admit to their clinics children not connected with summer schools who need this type of service, such as children of the summer camp at William Wirt Winchester Hospital, and those of the public school nutrition classes and special classes. Of the 64 schools in the city, 51 were provided with this dental service in 1926.

Five dental hygienists, whose work is confined to the children of the first five grades, give prophylactic treatments and instruction in mouth hygiene. This service reached 30 schools during the year, which means that about two years are required to complete all the schools, even within the limits of the first five grades. The hygienists gave 1,391 classroom talks on the care of the teeth, in addition to the examinations and prophylactic treatments, while 3,952 children were referred to family dentists for further dental care. Demonstrations of the dental hygiene work were given to several groups of parents.

Health education bulletin No. 20 of the Bureau of Education, U. S. Department of the Interior, by Dr. J. F. Rogers, discusses the importance of Better Teeth and outlines a program of dental prophylaxis and hygiene in schools.

The physical examination of the child before or just after entrance at school, Dr. Rogers states, is the foundation of health work, "and in this connection it is of the utmost importance that the teeth be examined and that disease and other defects of the first set be treated so far as possible, but it is on the prevention of decay of the permanent teeth that attention and effort should be centered. If the child has reached the age of 6 or 7 he should be examined by a dentist and treated immediately for the faults of development, already mentioned. In the third and sixth grades he should again be examined by the dentist and treated at the time for similar conditions in the enamel of teeth which appear at these periods." It is emphasized in this bulletin that the dental hygienist has proved useful as a special instructor in oral hygiene or as a supervisor of such instruction, but that all health teaching should center in the teacher, who should be fully equipped from her own interest, knowledge, practice, and pedagogical training to give appropriate instruction in dental hygiene to the child at different ages. "It is for the thorough examination of the teeth, for their instrumental cleanings, and for assisting the dentist that her training especially fits her."

The wide scope of the dental program which has been developed for children of school age, and the significance of this work from the standpoint of the community as a whole, is at once apparent. It is obviously essential that the future development of this program, as well as the possibility of a program for special groups of adults, should receive careful consideration. In several cities, a special committee of the local dental society has rendered valuable assistance in an advisory capacity in connection with such programs. It is believed that such a committee from the

New Haven Dental Society, appointed to cooperate with the health department, might be of considerable value to the community.

3. **Board of Education Program.** As previously indicated, the Board of Education assumes part of the responsibility for the health and well being of the school child, this work being organized under the department of physical education. The staff consists of one full time physical director, with two assistants and 12 instructors. Physicians are employed on an hourly basis to make special examinations. The expenditures for health and physical education work annually amount to approximately $18,050.

A. **Physical Education.** The department of physical education under Mr. Schnelle has charge of the physical training of the grade school children, their exercises and athletics. Corrective or adaptive exercises are arranged for children who cannot engage in more vigorous forms of exercises and games. Physical training activities are conducted in 11 well equipped gymnasiums, four assembly halls, in school yards, and in classrooms. These activities include directed play, formal gymnastics with especial reference to posture training, folk dancing, and athletics. The Public Schools' Athletic league, an organization in which every elementary school of grammar grade is represented, is an important factor in furthering participation in worth while leisure time activities. Tournaments in basketball, baseball, swimming, soccer, and track and field athletics are conducted by this League. Mass participation in athletics is stimulated through motor ability tests, e. g., tests for all physically able children in running, jumping, throwing, and chinning. Over 2,000 children participated in these tests in 1926.

High Schools. The physical training departments of the high schools are entrusted with the responsibility of giving each boy assigned to such department a physical inspection at the beginning of each school year. Up to the present time, the staff has not been large enough to care for the entire school enrollment. Notifications of physical defects found are sent to parents, advising them to take their child to their family physician for necessary treatment. Pupils with certain types of defects are not allowed to participate in gymnasium work without a doctor's certificate. It is believed that the health program of the high schools should be extended and that high grade nursing-teacher service should be provided.

B. **Nutrition.** The work of the Nutrition Department, under the supervision of Miss Mildred F. Warrant, may be divided into three phases. A general health program, so-called, has been carried on in all the elementary schools. An annual height-weight survey is made in April, May, and June. The three nutrition teachers weighed and measured 23,097 boys and girls in 1926. Out of this number 2,196 were found to be 10 per cent or more under weight for their height. During the year, more milk has been served in the grades, and several kindergartens have added a lunch period to their schedule. As in previous years, Miss Erickson of the Connecticut Food and Dairy Council gave many health talks in the schools which interested the children. These talks, and the use of attractive health posters have added impetus to the health movement which is steadily growing.

A second division of the work was the organization of nutrition classes in the following schools: Ivy, Scranton, Roger Sherman, Benjamin Jepson, Dwight (2), Benton, Edgewood, Beecher, Abraham Lincoln, Lovell, Worthing-

ton Hooker, Webster, Nathan Hale, Orange, Fair, and Dante. Those familiar with the location of these schools will observe that the various sections of the city are fairly well covered. These classes, with an average enrollment of 23 children, meet once a week with a nutrition teacher, a physician who is a child specialist, and the mothers, for health conferences. Efforts are made to discover physical defects and have them corrected. In this phase of school work, the attempt to have parents present at the time of physical examinations has met with considerable success.

It should be understood that these examinations of children known to be underweight for various causes, consume more time and are more complete than the routine physical examinations of all children of the first and third grades made by the school physicians of the health department. In 1926, there were 209 physical examinations made of children known to have special problems as indicated by the fact that they were definitely underweight. The problem in such a case may be one of nutrition, or it may be one of physical handicaps of various types. As a result of these examinations and the follow up work of nutrition workers and nurses, many tonsil and adenoid operations are performed. It is obviously important that this nutrition work should be closely correlated with the nursing and other health activities.

C. **Open Air Rooms.** There is a large class of children who should be provided for by open air rooms, either in separate buildings especially planned for these children or in open air rooms in regular buildings. These children are below normal physically, anemic, underweight, undernourished, or contacts of tuberculous families, but not having the disease themselves. In 1911 the first open air room was organized in New Haven.

The Department of Education operates 5 open air classrooms at the Beacon, Dante, Fair Street, Prince Street, and Skinner Schools, with 25 to 30 pupils in each room. There is apparent need for extension of these facilities for the benefit of children needing such care. There is at present a long waiting list. Rest periods and special lunch periods form a part of this program.

The newest phase of combined fresh air and nutrition work is illustrated in the Dante Open Window Room, opened in September 1926 with 25 children enrolled. The treatment in this room consists in the provision of fresh air by the open window method, the temperature being maintained at 58°-60° F. A half hour rest period on cots each morning and afternoon, and two mid-day lunches, including one tablespoonful of cod liver oil daily, form a part of the program. Regular school lessons are conducted. This type of work is very beneficial to the children needing such special care, and the success to date is attributed in no small measure to the cooperation received from all workers concerned, especially the principal of the school.

D. **Education in Hygiene.** Formal instruction in physiology and hygiene is one phase of the health education work. This is supplemented by health plays, pageants, and health projects to make the instruction vital and of interest to the children. Other forms of health education have been discussed in preceding paragraphs.

E. **Mental Hygiene.** The city department of education has an excellent system of psychological examinations and special class work, operated under the direction of Miss Norma Cutts (with the cooperation of the Yale Psycho-Clinic in special cases). During 1926, 12,500 standard group tests and 580 individual psychological tests were made by Miss Cutts and the staff.

The development of special classes for children mentally backward in school has been of immense value in recent years. Many children, reported as failing in school, tested normal in mental ability in so far as their capacity to assimilate school subjects was concerned. But a serious nervous instability was evident. These types of problems when discovered are now referred to a psychiatrist of the Mental Hygiene Society.

A second type of failure was found in the group of children testing about normal, but with serious cases of adenoids, defective vision, malnutrition, or other physical disabilities. Cooperation with the school nurse and the Dispensary, except in a few instances where parents have not cooperated, has cleared up the difficulty, and the child has been returned to his proper place in school. One recent development is noteworthy, namely the placing of a school teacher in the New Haven Hospital for the teaching of those children suffering from somewhat serious physical handicaps but who are at the same time able to do school work under these special conditions. Similarly, a school teacher is provided for crippled children at the Community Center.

Many pupils reported by the principals during the year as failing in school work or as serious disciplinary cases were found upon investigation and testing to be mentally defective. Those cases were placed in special classes whenever vacancies occurred. Many serious cases, needing the attention of a special class teacher, could not be transferred because of lack of room or because of distance from the nearest school containing a special class. There are at present 21 special classes in different parts of the city with an enrollment of 358 children.

The law of the state of Connecticut provides that mentally defective children may be granted a special form of work certificate at the age of fourteen. It is the attitude of the State Department of Education to grant these certificates in as small a number of cases as possible and to keep the children in school until they are nearly sixteen, certainly until they are fifteen. It is considered the business of the special class to provide sufficient handwork to keep the pupils contented in school. It is much more possible to do this in a central school like the Fair Haven Training School where rooms may be equipped with different materials and where teachers may specialize in different types of activity. In the Spireworth School recently built for subnormal children on the site of the old Carlisle Street School, one room was planned solely for the older boys who wish to leave school and have had several years of special class training. When a boy reaches fourteen he may be promoted to this class from any of the classes in the building and from other classes sufficiently near.

Superintendent Beede in his 1926 report properly called attention to the need for special provision for children of exceptional ability. "These are the children who, if given the best school conditions in their early years, will progress rapidly, becoming the exceptional men and women in society. They should not be held back to pursue the same curriculum that the average grade child follows." Only partial provision for these children has as yet been made. In schools large enough to permit the division of each school grade into several sections, there have been organized, A, B, C and D divisions according to the ability of the children. In summer schools, opportunity is also offered for the children who show unusual ability to "skip" grades.

F. **Crippled Children.** In 1924, representatives of the Crippled Children's Aid Society, brought to the attention of the Superintendent of Schools and the Committee on Schools, the need of a special room for crippled children. A survey of the situation was made, and in 1926 a room in Zunder School, especially equipped for the purpose, was opened. Children admitted to this room, now 13 in number, have either never attended school because of their lameness, or have attended school with great difficulty and by special arrangement made by the families concerned. The children are taken to and from school by bus. The teacher has had previous experience in teaching crippled children.

G. **Conservation of Vision.** Another important special class in the New Haven school system is that for conservation of vision. A room for this purpose was opened in April 1926 in Webster School. This room has been newly finished and made as light as possible, and is equipped with moveable furniture, typewriters, and special equipment. The teacher has familiarized herself with procedures in similar rooms in other cities and has pursued a course for teachers of conservation of vision. There are 15 pupils in this room, ranging from 8 to 15 years of age, of grades from 2 to 7, and living in various sections of the city. Special books of large-size type are provided, and all work given to the children is printed or written in large hand. This is considered one of the best rooms of its kind in the country.

The development of these special classes, together with the beginnings which have been made in the conduct of research work in schools, are noteworthy achievements. There seems to be an excellent opportunity for vocational

guidance and visiting teacher service, properly correlated with the continuing development of research and special classes.

4. **Recreation.** The provision of adequate space for recreational activities coupled with organized direction is a problem so closely related to school health work that it may be discussed under this heading. In addition to the direction of physical training and supervision of school games, New Haven now has a recreation commission of which the Chairman is Mr. L. T. Snow. The recent recognition in this manner of the opportunities of developing recreation facilities and of the results which may be attained by fostering wholesome play throughout the year for the boys and girls of the city is a distinct forward step.

In addition to the playground area around the schools of the city, amounting to about 27 acres, there are 54.38 acres of parks (Bay View, Clinton, Quinnipiac, and Waterside). The average daily attendance at the playgrounds of the schools is nearly 30,000 attendance units[1], while the attendance for 1927 at the 4 principal municipal parks was approximately 5,000. The provision of adequate space and direction for recreational activities is a problem of increasing importance to which the recreation commission is giving careful study. There is already indicated a distinct need for increased facilities.

In the selection of sites for school buildings in the future, emphasis should be given to the importance of providing adequate play space adjacent to the buildings.

Attention may well be directed to the present lack of provision at the public parks for definitely established playground areas for children under 16 years of age.

[1] If a child attends a playground more than once a day only one unit of attendance is recorded.

The value of play leaders in the direction of an all-year program of outdoor seasonal activities has been demonstrated in many cities.* Such provision in New Haven should materially strengthen the recreation program which is being developed, and would undoubtedly play an important part in the activities for health promotion, the proper use of leisure time, as well as in the prevention of juvenile delinquency.

It is believed that if leadership of this nature were more adequately provided, the facilities would be much more widely utilized.

5. **Appraisal of School Health Work.** The Appraisal Form for city health work allots 150 points for practices relating to the Health of the School Child. Against this carefully worked out standard based on the best practices of the large cities, New Haven scores 121.7 points. Two points out of 10 are lost because notification of weight of children, is sent to parents on the average less often than once per month. It is believed, however, that from a practical standpoint, the system in vogue in New Haven is satisfactory for local conditions.

A more serious defect is revealed by a study of the system of physical examinations where 15 out of 45 points are lost. Thirty-five out of 45 possible points are granted if children are examined at the rate of 6 per hour or less. New Haven receives 25 of these points on the basis of examination of 7 to 13 children per hour. New Haven receives 5 points for inspection of vision and hearing but loses 5 points because parents are not regularly notified of the time of physical examinations by the physician and invited to be present. At present, the physicians are not allowed

* As in Springfield, Mass., Cleveland and Cincinnati, Ohio, Paterson, N. J., Scranton, Pa., among others.

to remove the clothing of the children to the waist without the permission of parents. Only such a procedure, however, would enable the physicians to make thorough examinations of heart, lungs, musculature and posture. The results of the annual examinations indicate that much fewer defects of heart, lungs, and posture are detected by the present methods, than might be expected for a school population of this size. Hence, there is indicated a need for more thorough physical examinations than the present routine practice provides.

Under correction of defects, full score is given for correction of teeth defects, but the number of individuals fitted with glasses, the number of tonsil or adenoid operations recorded, and the number of heart and lung defects placed under physicians' care fall short of the standards, with the result that only 20.7 out of 30 points under this heading are obtained.

Nursing visits in behalf of school children receive full score (10 points). The sanitary supervision of school buildings is in accord with accepted practice except for a loss of 2 out of 15 points because the number of school rooms provided with thermometers is less than 90 per cent of the total. Health education measures and recreation facilities receive full score (40 points).

6. **Private Schools.** If adequate supervision of all children of school age in a community is to be exercised, such supervision must be developed by some means for private schools. In some cases private schools make their own arrangements for this service and have excellent programs. In many other cases, there is little or no work done, the schools depending largely or entirely upon parents for such care as is exercised, without including any coordinated program of health education or supervision in

the regular curriculum. In 1920, a survey of the situation in the 83 largest cities showed that school health supervision was exercised in private schools in 22 cities, in 16 of them by the health department.

Several of the private schools in New Haven have physicians attached to their staff, but not all the schools have a comprehensive school health program. There is an excellent opportunity in this city for development along this line.

7. **Special Organizations.** Several organizations in New Haven, in connection with their regular programs, have developed facilities which are aimed to improve or conserve the health of the child of school age. A brief reference to some of these provisions seems appropriate.

The New Haven Boys' Club, with an enrollment in 1926 of 1,143 boys of 8 to 21 years of age (1,488 in 1927), has a well conceived program of health work, arranged by a health committee. Upon entrance to the Club, each boy receives a complete physical examination, the results being recorded and filed. An effort is now being made to examine these boys annually, and to secure the correction of defects found by home follow up work. These home visits are now made by Board members, but it is suggested that records of defects found among boys of school age might well be referred to the health department for follow up work by the school nurses. In 1926, 567 physical examinations were made and 139 defects were discovered. A total of 75 home visits were made in behalf of these cases, with satisfactory results. A physical education program is carried out, under a qualified physical director. The excellent gymnasium and swimming pool are utilized to good advantage. A summer camp, with 56 acres of land and permanent buildings, provides a vacation and recreation

for two weeks or longer for over 300 boys during the summer.

The New Haven Council of Boy Scouts has a health committee which is developing a well rounded program of health and safety. Every year a large number of the boys in the troops (351 in 1927) go to the summer camp, Camp Sequassen in the Litchfield hills, for an average period of about 3 weeks each. These boys receive physical examinations before entering and upon leaving camp, and while there, follow regular habits, have good food, pasteurized milk, supervised exercise, and give attention to personal hygiene.

Health is one of the four points emphasized in the New Haven Girl Scouts program, and this is emphasized by means of hikes, nature work, a summer camp, courses in personal hygiene, child and home nursing, and first aid. Health is taught indirectly through games, and directly through posture work. A requirement for the second-class test is the keeping of a height-weight chart by each girl for a period of one month. She must also know how her record compares with the standard or normal for age and weight and measurements. At the end of the period a test is given by a nurse to each girl. If this health record is kept satisfactorily for a period of three months, a merit badge is awarded. A summer camp, Camp Kolawila, located at Silver Sands in East Haven, provides a six week's vacation for any girl wishing to attend. A physical examination is required before entry, and a health certificate must be filled out by a physician within three days of the time the girl enters camp. A registered nurse and athletic director reside at camp, and a physician makes daily visits. Raw milk from tuberculin tested herds is consumed, city water is provided, and a dietitian plans the menus.

Every summer the 350 to 400 Camp Fire girls in the city spend about 2 weeks camping. They go in groups, each group being made up of 20 to 23 girls, and each with a leader. There is no physical examination required previous to the camping period, the only requirement being that the girl shall have been in the Camp Fire at least one year. One of the 7 points of the Camp Fire code is "Hold on to Health," and their watchword is "Wohelo" —the first two letters of the three words "Work," "Health" and "Love." Thus health is embodied in the work. First aid, keeping health charts, and a knowledge of personal hygiene are required for some of the tests, A course in hygiene is given to all girls taking the firemakers, or 2nd rank test. The school nurse from Sheriden High School gives a course in personal hygiene and first aid once a week for a period of 8 weeks, which is required before a test may be taken.

8. **Recommendations:**

Recommendation 53: That the routine annual physical examination be made in the first and fifth rather than the first and third grades, with examinations of all newcomers in the second nd fourth grades as at present.

Recommendation 54: That parents be notified of the time of physical examination by the physician and urged to be present, and that a plan be developed whereby more complete examinations of heart, lungs and posture may be possible, with full records of findings maintained on the school chart of each child.

Recommendation 55. That school children should be examined in the first, third, and sixth grades by the school dentist, that defects of development in the second teeth should be appropriately treated at the time of examination

or as soon thereafter as possible, and that children should be examined annually by the teacher, nurse, dental hygienist, dentist, or physician, and all cavities and other diseases of the teeth should be treated by the family or school dentist so far as possible. It is further recommended that a system of teaching dental hygiene be inaugurated in substance similar to that outlined in Health Education Bulletin No. 20, Bureau of Education, U. S. Department of the Interior, 1927, p. 17.

Recommendation 56. That a survey be made of the presence and accuracy of thermometers in school rooms to the end that each room be provided with a thermometer and that daily temperature records be maintained for each room.

Recommendation 57. That the program for open window rooms be extended to provide at least one open window room in a school building in each section of the city.

Recommendation 58. That consideration be given to the possibility of extending the school health service more completely to the junior high and high schools.

Recommendation 59. That a physician with special training and experience in infant and child hygiene be appointed as director of the bureau of child hygiene of the health department. It is further recommended that a part of the function of such a director be the supervision of school health work in an effort to bring about closer coordination of all school health activities within the city, in cooperation with the Board of Education and other agencies engaged in this work; to make possible three complete physical examinations of each child during his school life; and the extension of the program to the high schools.

Recommendation 60. That the private schools of the city give consideration to the development of more systematic programs of school health supervision than now exist.

Recommendation 61. That efforts be made to secure more adequate provision at the public parks for definitely established playground areas for children under 16 years of age and that leadership for directed play be provided.

Chapter XVIII.

NUTRITION.

With the cooperation of Ira V. Hiscock
Assistant Professor of Public Health, Yale School of Medicine.

1. **Objectives.** Good nutrition is recognized as an important preventive force in a community health program. A foreword to the excellent nutrition handbook of the Connecticut State Department of Health emphasizes the vital part which food plays in health, in the following terms:

If rightly chosen and taken in suitable amounts, food will:

(a) Lay the foundation for health in infancy.
(b) Assist a child to gain normally during the growing period.
(c) Help the adult to maintain a high degree of health.
(d) Enable the mother to meet the demands of reproduction without draining her own health resources.

In New Haven, nutrition work, exclusive of research work, is carried on primarily by two agencies, the Board of Education and the Visiting Nurse Association. Several other organizations are concerned with this problem, but from a broad community standpoint, such organizations are cooperating with one or both of the above agencies or are merely providing a dietitian for their individual institutions, as is the case with the hospitals and the Children's Community Center.

2. **Nutrition Work of the Visiting Nurse Association.** The Home Economics Department of the Visiting Nurse Association was organized in 1919 under the supervision of a trained nutrition worker. This department is now an important part of the Association, and has a staff of two dietitians* and 5 visiting housekeepers. Its activities consist in nutrition work, household management, and family budgeting.

The dietitions instruct the nursing staff in principles of nutrition, supervise the work of the visiting housekeepers, and plan diets for special medical cases. Instruction is given to home-makers, in balanced diets, buying, preparation, and care of food. One of the functions of the dietitian is to aid families in preparing their budgets and to teach them the value of budget-making. In this work, the dietitians also cooperate with various welfare agencies in the city, especially the Organized Charities Association, the City Department of Charities, the Catholic Social Service Bureau, the United Jewish Charities, and the Red Cross. Monthly meetings are held with these groups for discussion of budget problems.

The teaching of nutrition principles to expectant mothers at prenatal conferences, and to mothers at preschool conferences is an important function of the nutrition workers. Special classes of Mothers' Clubs are held at two of the settlement houses and talks are given to various other groups as occasions arise. The program aims to teach the nurses the diet for the normal family, for the usual sickness situation, for different age groups (exclusive of school children), and to teach the recognition of faulty

* In the plan of Community Health Organization for a city of 100,000 population (American Public Health Association, 1927) it is suggested that there be at least 1 specialist in nutrition work to serve in an advisory capacity with the staff nurses in connection with their problems in the home and in the clinics.

nutrition habits and how to correct them. More and more it is believed, the nutritionists should give the nurses the material and show them how to use it. Increased efforts to incorporate the nutrition program as a part of the every-day work of the staff nurses should strengthen the nutrition program. The work of the visiting housekeepers is a unique and highly creditable community service.

During 1927 there were made 6,217 visits by workers in the Home Economics Department, of which 885 were classed as supervisory visits and 159 as visits in connection with budget making. A total of 1,064 hours were spent in well baby and preschool conferences by the nutrition workers. Literature of the State Department of Health, of the Connecticut Dairy and Food Council, and of the Metropolitan Life Insurance Company was extensively utilized.

3. **Work of the Board of Education.** As indicated in the section on school health supervision, the nutrition work of the Board of Education is carried on under the Physical Education Department, of which Mr. Henry J. Schnelle is director. Formal instruction in physiology and hygiene is a part of the program. This work is supplemented by health plays, pageants, and health projects to make the instruction vital and interesting. A representative of the Connecticut Dairy and Food Council cooperates in connection with the health education and nutrition program in the schools.

Nutrition classes are organized in 16 schools. These classes are made up of children who are 10 per cent or more underweight for height. A complete physical examination of each child is made in order to determine whether the child is "free to gain." If physical defects are found, such as diseased tonsils and adenoids, carious teeth, defective

vision, cardiac or lung conditions, an effort is made to secure their correction or treatment.

A chart is prepared for each child, which carries data regarding age, height, weight, average weight for height, pounds and percentage underweight, with the average expected gain indicated by a solid black line. The actual weight of the child each week is recorded on the chart by large red dots and connecting red lines, marking the gains or losses. Red stars at the top of this chart indicate that all lunches (Rule I) have been taken, while blue stars indicate rest periods (Rule II), and green stars represent the attendance of a parent or some member of the family at the class.

Each child is also required to submit weekly a 48 hour food list which is carefully reckoned up in calories by the nutrition worker who gives suggestions regarding proper diet and health habits. These classes meet once a week for 30 minute periods, during school hours, and are in charge of a physician and a trained worker. No child is admitted to a class whose parents do not signify their willingness to attend the weekly meetings and to assist the child in carrying out the following prescribed rules.

Rule I. A mid-morning and mid-afternoon lunch of wholesome food.

Rule II. A 20 minute rest period lying down before the noon and evening meal.

Rule III. Early to bed with windows open.

Rule IV. Avoidance of tea and coffee and of sweets between meals.

All children who are underweight are given an opportunity to eat a mid-morning lunch in school. This lunch usually consists of a half pint of milk, with a bread and

butter, graham cracker, or a peanut butter sandwich. While discussing lunches, mention may be made of the excellent cafeteria maintained at the Troup Junior High School, to provide a hot mid-day meal for those pupils whose homes are so far from the school that the intermission of 65 minutes is inadequate for them to return to their homes for lunch. The nutrition teachers, the cooking teachers, and the school nurse have rendered valuable service in instructing the pupils in the wise selection of foods served in the cafeteria in order that they may have properly balanced meals.

3. **Home Economics Club.** A city home economics club provides an opportunity for the dietitians of the city, the teachers of cooking in the schools, and others interested in nutrition to discuss problems of mutual interest. Meetings are held monthly with an attendance of from 20 to 30, representing several different organizations and institutions. Special speakers are frequently secured in order that the members may be kept informed of new developments in this field. This is an excellent method of maintaining, among the different workers, a clear understanding of the community problem as a whole, and of the opportunities for cooperation.

4. **Summary and Recommendations.** Nutrition work is recognized as an essential factor in the public health program of the city. For several years there have been developing plans of activity designed to reach from the prenatal period into the adult age groups where the family is considered as a whole. It would seem that the programs for school children and for the other groups of the population have developed somewhat independently, however, and it is questioned if both programs might not be made even stronger by periodic conferences between the

nutrition workers of the Board of Education and the Visiting Nurse Association, and the school nurses of the Board of Health. Nutrition problems must be frequently discovered by school workers among families on the records of the Visiting Nurse Association, and likewise the workers of the latter organization must often be concerned with problems in families where there are school children. A discussion of these problems and of the best methods of handling them in a given case should be highly beneficial to all concerned. It is important to recognize the fundamental principle that the individual under health supervision is a complete biological entity and that service of a special type, such as nutrition guidance, should, in general, be furnished by the specialist through the agency of a physician in the clinic and through the agency of a nurse in the home. It is gratifying to note that the physician plays an important role in this nutrition work in the schools. The physician is indispensable in examining children and determining which of them are deviating from the nutrition normal and in advising remedial measures. The main task of meeting the actual educational problem in the home will rest primarily, however, with the nutrition workers and the nurses.

In order that the nutrition work of the city may be further developed along sound lines, it is recommended:

Recommendation 62. That during the school year, joint conferences be held monthly between the nutrition workers of the Board of Education, and of the Visiting Nurse Association, and the director of school nursing, with a view to insuring uniform methods and maximum service to families as well as to individuals.

Recommendation 63. That milk of the highest grade only be served in the city schools.

Chapter XIX.

ORTHOPEDICS.

With the cooperation of Gertrude E. Hodgman, Assistant Professor of Nursing, Yale School of Nursing.

1. **Essential Elements in a Community Program for Orthopedics.** In recent years we have come to a new appreciation of the importance of bodily mechanics as a factor in health,—an importance which demands for orthopedics and posture training an essential place in the community health program.

The essentials in such a program are four in number; hospital care for pronounced orthopedic defects with the necessary adjunct of occupational therapy; clinic service for less extreme deviations from normal and for after-care; nursing follow-up, which in this field is of such peculiar importance since treatment must often be so long continued; and training of the normal or nearly normal individual in good postural habits as a preventive of later deterioration.

Hospital care for orthopedic cases is provided by the three hospitals. Financial aid is furnished by the Crippled Children's Aid Society to patients in the Grace and St. Raphael's Hospitals; and this organization also supports ten beds for after-care at the Children's Community Center. Clinic service is rendered by the New Haven Dispensary and by the physicians of the Crippled Children's Aid Society; and nursing service, for the latter clinics only, by the Crippled Children's Aid Society. The Visiting Nurse Association has no special provision for expert orthopedic care. Posture work and vocational training as

carried on in the public schools has been discussed in a preceding chapter. The New Haven Normal School of Gymnastics exerts a valuable educational influence in this general field.

The services of the hospitals, the Dispensary and the Crippled Children's Aid Society must be discussed somewhat more in detail.

2. **Hospital Service.** Both the New Haven and Grace Hospitals have excellent special orthopedic services and at St. Raphael's many orthopedic cases are treated in the course of regular surgical practice. The service at the New Haven Hospital is in charge of Dr. W. M. Phelps and in the year July 1926-June 1927 cared for 657 cases. The service at Grace Hospital is in charge of Dr. R. J. Cook and Dr. C. W. Henze and in 1926 cared for 384 cases.

3. **Clinic Service.** The outpatient service at the New Haven Dispensary is an unusually complete one, including one muscle-training class under Dr. W. M. Phelps, two general orthopedic clinics under Dr. Phelps and Dr. M. K. Lindsay, a fracture clinic under Dr. Lindsay, two foot clinics under Dr. D. J. Morton, a posture clinic under Dr. Phelps and three weekly physiotherapy clinics. The registration for these clinics in the month of December 1927 was as follows: physiotherapy, 156; orthopedic, 136; muscle-training, 82; heliotherapy, 44; posture, 40; fracture, 19; foot, 15; total, 492.

The growth of this admirable clinic service is a cause for great satisfaction.

4. **The Crippled Children's Aid Society.** The principal agency in this field is the Crippled Children's Aid Society (Mrs. John R. Demarest, President). For thirteen years this organization has performed an exceedingly useful

function in providing material aid and nursing follow-up for orthopedic cases.

This society was organized in 1914 by a group of ladies interested in the relief of crippled children by affording them material assistance, by providing medical and surgical services, by supplying necessary orthopedic appliances, and such further means of hygienic and social uplift as may tend to remove the handicap to children's welfare and happiness which their unfortunate position has imposed.

The first nurse of this organization was employed through an arrangement with the V. N. A. for part time work. Later, a full time nurse separate from the V. N. A. was appointed. At the present time one full time nurse and one half time nurse, who is studying physiotherapy, in preparation for full time work with the Association, are employed.

The organization consists of a Men's Board of Trustees, a Board of Physicians (Dr. Carl W. Henze, Dr. Leonard W. Bacon and Dr. Raynham Townshend) and an all Woman's Board of Directors. The standing committees are: Case Work, Education, Service, Nursing, Children's Equipment, Entertainment—indicative of the broad scope of interest and work of the Society.

The Society had in 1926 receipts of $16,998.80, of which $14,600 came from the Community Chest, $512.00 from annual dues, $197.50 in collections from patients and the rest from various miscellaneous sources. Expenditures amounted to $16,996.08, distributed as follows:

Hospital and Community Center care	$7,354.26
Nurses' salaries and equipment	3,131.58
Braces, shoes, X-rays, supplies	2,130.63
General expenses, travel and miscellaneous	2,177.48
Automobile and automobile expenses	1,616.93
Office equipment	585.20

The bulk of the expense under the first item mentioned is for the support of ten beds at the Children's Community Center, for which the Society pays $10 a bed per week, for the care of rickets, post-operative and similar cases. Thirty-seven orthopedic cases were thus cared for in 1926.

The staff of the society includes besides an office secretary the two nurses, Miss Pansy V. Besom and her assistant.

Operative cases are all sent to Grace Hospital and Clinic service (twice a week) is generously provided without charge by Drs. C. W. Henze and L. W. Bacon. Physiotherapy cases are similarly handled by Dr. H. E. Stewart and Miss Margaret O'Neil; and the new nurse is studying physiotherapy with Dr. Stewart in order to prepare herself for giving nursing treatments. Miss Besom and her assistant take the children to the physicians for treatment and do follow-up in the homes. One hundred and sixty children were carried in 1926 and 3,014 calls made by the nurses, while 3,688 days of care were given to 25 children at the Community Center.

The opening by the Board of Education of a special class in vocational training for crippled children at the Zunder School last year was largely due to the initiative of the society. More extended provision of this kind is urgently needed.

The Crippled Children's Aid Society performs admirable work in enlisting and focusing attention upon a vital problem in the field of public health. As we shall point out, however, the scope of its influence might profitably be widened.

5. **Summary and Recommendations.** It would appear that hospital and clinic facilities for the care of orthopedic cases are ample in New Haven.

The nursing service and material relief provided by the Crippled Children's Aid Society is excellent in plan and quality. It seems unfortunate, however, that its facilities should be available, as appears to be the case, only to the patients of three individual physicians. The New Haven Dispensary, which is another member of the Chest and which maintains an excellent orthopedic clinic, receives no service from the organization. It would seem eminently proper that the nursing service of the Society and its funds for material relief should be made available for all qualified orthopedists in the community.

Recommendation 64. That the nursing service and the facilities for material relief of the Crippled Children's Aid Society should be placed at the equal disposal of all qualified orthopedists in the community with a corresponding increase in the size of the advisory Medical Board.

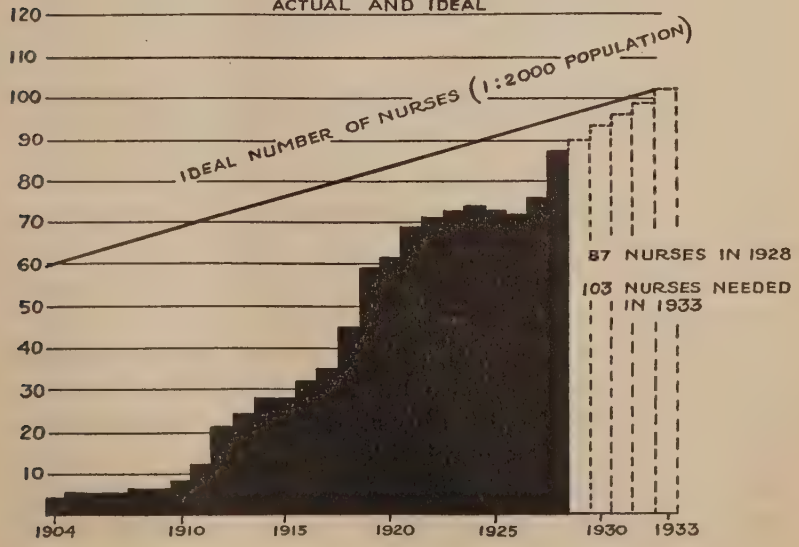
Chapter XX.

PUBLIC HEALTH NURSING.

By Gertrude E. Hodgman, Assistant Professor of Nursing, Yale School of Nursing, and Katharine Tucker, General Director, Visiting Nurse Society, Philadelphia, Penn.

1. **Development of the Program.** Since the Health Survey of New Haven in 1917, much has happened in the development of public health work. Among the most striking of these developments has been the steady growth of public health nursing. New Haven has shown itself a leader in this field. In 1917 the ratio of public health nurses to the population was approximately 1-5,000; in

FIG. 3. PUBLIC HEALTH NURSES IN NEW HAVEN ACTUAL AND IDEAL



1927, 1-2,450, while in 1928 this will be increased to 1 to every 2,216 of population. Looking toward the generally accepted standard goal of 1 nurse to every 2,000 population it will be necessary for New Haven to increase the number of nurses yearly (based on the normal increase in population to be expected) at the rate of 3 each year for the next 5 years.

It is to be hoped that the City Health Department will be able to continue to assume an increasing proportion of the financial responsibility for this increased service, as methods of maintaining standards of work in public health nursing can be developed and newer aspects of the work proven.

Along with this steady growth in numbers there seems also to have been, on the part of those responsible for developing the services, exceptional appreciation of the importance of high standards of work, and of policies of administration in accordance with the best thought along these lines.

At the time of the 1917 survey, no supervision was provided for the nurses in the schools, there were no nurses doing follow-up work in the Bureau of Communicable Diseases, the tuberculosis work was done by a group of five nurses without specialized supervision, and the infant welfare work was carried on jointly by the Infant Welfare Society and the Visiting Nurse Association, without specialized staffs.

In 1927 there were 13 nurses in the schools working under the supervision of a nurse director of the Bureau of Nursing of the Health Department; there were 4 nurses in the Bureau of Communicable Disease Control; 1 nurse (and 1 male attendant) in the Division of Venereal Diseases; 4 welfare nurses in the Bureau of Nursing of the

Health Department doing prenatal and child welfare work, and an average of 55 nurses in the Visiting Nurse Association carrying a broad general program with specialized supervision in the Tuberculosis, Child Hygiene and Maternity services.

In 1920 to 1923 a careful study of the value of a specialized nursing program was made through the opportunity afforded by the "New Haven Health Center Demonstration". This demonstration was a cooperative program carried by the chief public and private health agencies of New Haven. The study indicated so definitely the value of the general nurse in the home, that since that time the accepted policy in the development of the work has been constantly in this direction. In 1927, the city Department of Health, recognizing the importance of generalized nursing service in the home, delegated its tuberculosis nursing service to the Visiting Nurse Association while continuing to recognize its financial responsibility for this work (to the amount of $1,775.00). For the coming year, 1928, the department is pledged to the amount of $400 a month (4 nurses at $100). This policy of the Department of Health seems to us a very forward looking one.

2. **Nursing in the Health Department.**

Bureau of Communicable Disease Control. The four nurses of this department work under Dr. Lewis. They visit as far as possible every reported case of measles, whooping cough, mumps, chickenpox, diphtheria, typhoid, (and others as indicated) to placard the house and to remove the placard, and to ascertain the patient's condition and whether he is under medical attention, to secure the observation of isolation precautions, to obtain cultures where indicated, and to follow up contacts and undiagnosed cases, and to release from quarantine.

Also, school absentees of three days and over are investigated by this department as a part of the program of communicable disease control. Statistics of the nursing work are as follows: Total visits 22,859; school absentees 7,747.

There seems an opportunity for avoidance of duplication and for better correlation between the work of these nurses in the home visiting of school children and the regular work of the school nurses under Miss Barrett. We would urge that this question be given careful consideration by the Department.

This department also maintains the services of a practical nurse or housekeeper who is used to care for mild cases of communicable disease in the home, thereby enabling the mother to continue her work if she is the bread winner for the family.

The Division of Venereal Diseases. The greater part of the time of the nurse is engaged in attendance at clinics. Home visits are made to clinic delinquents, and occasionally to find contacts. The greater part of the latter work, however, is done through patients already in attendance at clinics, since it is usually considered not advisable to visit contacts without the permission and knowledge of the infected person.

At present there is no means provided of informing other nursing agencies concerning cases of infection of these types in the home. Since both the school and Visiting Nurse Association nurses are constantly visiting in homes where some member of the family is under treatment in their clinic and where such information might be of great service in obtaining information as to diagnosis and treatment of contact cases, it would seem that some plan could

be worked out between these groups which would stimulate the finding of more cases without undue publicity concerning the infected person.

Bureau of Nursing. The nurses of this Bureau under Miss Barrett's able direction and supervision, are divided into two groups, school nurses and welfare nurses. The school nurses carry on the usual activities of school nurses in relation to the first aid care of minor ailments, re-admission to school after three day absences, (except cases of major contagion) assistance with physical examinations of first and third grades, (also of newcomers, in second and fourth), class room inspections and health talks and home visits.

Qualifications. The nurses are employed under civil service, which requires that they be graduate registered nurses under 40 years of age. Appointments are made according to standing in the examinations. It would be highly desirable to work towards the requirement of a high school diploma as a prerequisite to appointment.

Salary. The salary scale is from $1,200 to $1,550 for 12 months (one month's vacation). Increases are granted at the rate of $50 each year.

Program. The program in school nursing includes the grade schools, public and parochial, and two Junior High Schools; including about 28,600 children, of whom about 4,000 are in parochial schools. This is an average of 1 nurse to 2,200 children. Each nurse works in 4 or 5 schools. During the summer months home follow-up, vaccinations, Schick testing, etc., are carried on.

In February 1928 two nurses were added to this staff,—a total of 15. Two Junior High Schools were added. The ratio of nurses is now 1 to 2,000 pupils.

Educational Program. Other than the weekly conference, there is no definite program of staff education for these nurses. The Director of the Bureau has many administrative duties in arranging the time of nurses, dental hygienists and school physicians in the different schools. She carries much of the work involved in arranging for clinic appointments for school children and for necessary cooperative arrangements between the other nursing and social agencies and the school nurses. This leaves her very little time for supervision in the schools and for the development of a more effective program in general. Many of the nurses, on their own initiative and with the Director's encouragement, have taken various courses related to their work and in other ways are keeping abreast of their field. The department itself, on the other hand, seems not to have sufficient supervision, nor incentive through adjustment for time and increase in salary, to stimulate the staff to further preparation for the work in their highly specialized and important field.

Welfare Nurses. The program of work of the welfare nurses (3 in 1927, 4 in 1928) consists in the delivery of certificates to newborn babies (2,630 in 1926); referring babies to welfare stations (720 in 1926); social service calls (720); practical demonstrations (only 155, or 51 per nurse); the finding of sick babies (25) and of prenatal cases (79). Also, these nurses supervise the 26 registered midwives of the city visiting each one once each month.

While the work of the welfare nurses is excellent, there is unavoidable duplication involved in the visiting of infants in the homes by two groups of nurses (those of the Health Department and the Visiting Nurse Association). The work performed by the welfare nurses is necessarily very limited in amount since they only pay on the average

2.5 visits per infant and the fact that they have no expert supervision from an infant welfare specialist cannot fail to militate against the quality of their service. It has been proven again and again that generalized service is most economical and efficient and we have here, not only a violation of the principle of generalization but a direct duplication of visitation by two nurses for essentially the same purpose. The delivery of birth certificates, which is of course of great educational value, could be carried on by the staff nurses of the Visiting Nurse Association as the agents of the Health Department in such a way as to effect the most vital contact with the conferences of the Visiting Nurse Association which it is desired that the mothers should attend. The fact that the Visiting Nurse Association nurses are carrying a broad generalized program and are already visiting in the majority of these homes to give post-natal care offers obvious opportunities for economy of effort. The supervision of midwives is a regulatory, not a home nursing, function and there would be no advantage in principle in handling it otherwise than as at present.

In general, however, it would be of advantage from the standpoint of the health program as a whole if the Board of Health would follow the policy adopted in relation to tuberculosis by turning over its welfare nursing to the Visiting Nurse Association and delegating that organization to represent it in that field also. The money appropriated by the city for welfare nurses would bring in far larger returns to the community if expended in cooperation with the Visiting Nurse Association than under the present plan. The Health Department must and should exercise ultimate control of all health policies; but when, at a given moment, better results may be secured at lower costs by cooperating with an existing private agency it would seem unwise not

to take advantage of that fact. We have seen, for example, how greatly the city profits by using the contagious pavilion of the New Haven Hospital instead of operating its own Isolation Hospital; and this is another case in point.

3. **The Visiting Nurse Association.** The Visiting Nurse Association of New Haven has many interesting and splendid achievements to its credit. It is significant that the nurse, Miss Mary Grace Hills, who first came to the Association for a trial period of six months in 1904 is still with the organization as its superintendent and the first president of the Association, Miss Prudden, only resigned her post in January, 1928. These facts, accompanied as they are by the facts of the remarkable growth of this work in numbers and in quality of service, means that the New Haven Visiting Nurse Association has enjoyed, in this age of change, the benefit of a consistent policy and of seasoned experience.

Staff. The nursing staff of this organization for 1927 averaged 55—this included the Superintendent and Assistant Superintendent, 3 general division supervisors, one supervisor of tuberculosis work, one supervisor of child welfare, one educational director, and a staff of nurses averaging 47 throughout the year. This number included 4 nurses who work in West Haven. With the recent additions to the staff for hourly nursing and delivery service, a total of 62 nurses are at present employed. The ratio of supervisors to staff nurses is 1 to 5.5, an excellent showing and largely responsible for the high quality of work performed.

Budget. The budget for 1927 was $137,000, of which $66,327 came from the Community Chest, $5,000 from the city, $1,775 from the Department of Health, and the re-

mainder from endowment, fees from patients, Life Insurance Companies, and from the Employees Tuberculosis Relief Association. Forty-four and seven-tenths per cent of the services rendered were paid for; 6.6 per cent were given free; 48.7 per cent were on a "no charge" basis.

Board. The Board of Directors of the Association consists of 40 members who are all women except for Dr. Rice, the Health Officer, who has been recently elected to this Board; there is also an advisory board of 4 men; and a medical advisory board of 5 members appointed by the New Haven Medical Association.

The Board and its committees present a most exceptional picture of activity and intelligent direction. Each member of the Board is kept constantly in touch with the work and each committee is thoroughly responsible for its phase of the program. Such direct participation, by a widely representative group from the community in public health nursing activity ensures the highest standard of work and continuity in its excellence.

Committees. There are 10 standing committees, with no power to act except the nurses committee, which acts under special conditions. Their respective functions are indicated below:

Nurses' Committee, 12 members including chairmen of other committees and six additional members has to do with policies related to the nurses, salaries, appointments, sick leaves. It acts as an Executive Committee in relation to the Board.

Finance Committee, duties usual for such a committee.

Child Welfare, development and problems of child welfare program.

Tuberculosis, development and problems of the tuberculosis program.

Service and Uniform, really a subcommittee of the nurses' committee relating to sick nurses and problems of uniforms.

Supply and House, duties usual for such a committee.

Home Economics, development and problems of home economics department.

Education and Publicity, responsible for annual meetings (these are open meetings to which the public is invited —a splendid feature of the organization), reports, record department, educational work, printing, publicity. This committee was responsible for the Board Members Institute of 1927, the first institute of its kind in the country, attended with great success. It also arranged at an earlier date an Institute for Supervisors, a real contribution to this aspect of the work.

West Haven. Special problems of West Haven; members are residents of that town.

Volunteer Service. A group of ten women give volunteer service in connection with the work of the record office, and thirteen others assist in the child welfare conferences. Others provide service in the making of surgical dressings and in driving automobiles. All of these activities lend themselves well to volunteer service,—and make an important economic contribution to the work of the organization.

Program. The following data indicate the volume and scope of work of the organization:

PATIENTS AND VISITS.

	1925.	1926.
Patients January 1	11,238	9,671
New patients during year	6,122	5,648
Patients cared for	17,450	15,319
Patients discharged	7,972	7,643
Readmitted patients	193	355
Patients under care December 31	9,671	8,031
Patients sent to hospitals	301	271
Patients sent to tuberculosis sanatoria	78	79
Visits made by Nursing Department	115,669	104,040
Visits made by Home Economics Department	6,873	4,834
Hours of nurses and nutrition workers at Well Baby Conferences	6,636	6,818

ANALYSIS BY AGE GROUPS OF CASES ADMITTED.

	1925.		1926.	
	No. of cases.	Per Cent of total.	No. of cases.	Per Cent of total.
All Ages	6,122	100.00	7,707	100.00
Under one year	2,500	40.84	3,163	41.04
1-2	205	3.35	475	6.16
3-5	516	8.43	830	10.77
6-14	681	11.12	547	7.10
15-29	989	16.15	1,093	14.18
30-44	665	10.86	913	11.85
45 and over	566	9.25	686	8.90

In the statistical report of "Principal Diseases and Conditions of Patients for 1926" the volume of work in each service can be studied. It is interesting to note that in this organization there seems to be no sacrifice of the educational work in child welfare, prenatal, and tuberculosis work to the needs of the acute and sick services. This is an important point to be considered in any generalized program.

Children's Service in 1926. 3396 cases admitted, which was 43.85 per cent of all admitted cases, with a total of

93,992 visits.[1] Thirty-six and seventy-four hundredths per cent of these cases admitted were under 1 year of age. Fourteen well baby and 9 preschool conferences were held weekly, where instructions were given by the 23 conference doctors, nurses and nutrition workers employed by the organization.

Maternity Service. The next largest service is ir maternity work, including prenatal visits,—16.76 per cent of admissions, 11,026 visits, of which 8.34 per cent were prenatal cases. Two prenatal clinics are held each week. Three nurses have recently been added to the staff to provide for a delivery service in the home. The inclusion of this work practically rounds out the program for an adequate community maternity service. Except for the prenatal and delivery cases carried by the New Haven Dispensary and the relatively few cases visited by the welfare nurses of the Department of Health, all the maternity program in its home nursing aspects is provided for the city by this Association. The Junior League offers invaluable assistance in the conduct of the prenatal and the infant welfare clinics.

Acute Service. The third largest service which the Association renders is to acutely ill cases. This amounts to 23.86 per cent of cases admitted, 8801 visits. All cases of communicable diseases except smallpox are included in this work.

Chronic Cases. The fourth service is for chronic cases; 14.94 per cent of admissions, 25,607 visits. Included in this group is the work with the diagnosed cases of tuberculosis; 2.91 per cent of admission, 6,870 visits, and with tubercu-

[1] It should be remembered that these figures represent total visits paid to a given group of discharged cases often extending back over more than one year.

losis contacts 4.74 per cent of admission, 11,505 visits. To cases of chronic illness (cancer, rheumatism, apoplexy, heart disease, senility, etc.), 7232 visits were made by the organizations during the year, with an average of 15.4 visits to each case.

Statistical Data. The cost of a visit is $1.01. This compares favorably with work in other cities in so far as such comparison is possible.

Hourly Service. On November 1, 1927 the Visiting Nurse Association took over the hourly nursing service which had been started ten months previously by the Nurses Registry.

In spite of the fact that this service had grown for a time it had been on the whole operated at a loss to the registry; and after careful consideration it seemed best to have it carried by the Visiting Nurse Association. One additional nurse was added to the staff as a first call nurse, although several other members of the staff are enlisted in the work as needed to meet calls occurring at the same time. It is expected that this service will be on an entirely self-supporting basis. The charges for this service are $1.50 for the first hour and $1.00 for each additional hour, with a maximum period of four hours.

To date the calls and income for this service are as follows:

	Calls	*Income*
November 1927	48	$43.25
December 1927	92	146.75
January 1928	175 (194.5 hrs.)	209.75

In January this amounted to something more than the time of one nurse.

Mental Hygiene. At the present time the Association has no specialist or supervisor in this phase of work. There

is close cooperation between the nurses of the Association and the Mental Clinic at the New Haven Dispensary and Miss Thatcher, the social worker of the Society for Mental Hygiene attached to this clinic.

Orthopedics. This phase of work has not been developed in the Visiting Nurse Association although it is the only organization at the present time available to the orthopedists of the community aside from those directly affiliated with the Crippled Children's Aid Society.

Educational Program. An educational director is employed who is in charge of the various staff educational activities of the association.

Student Nurses. All members of the senior group at the Yale School of Nursing receive a carefully planned course of two months' experience and instruction in public health nursing with the organization. The number of students of course varies with the size of the class. In 1927 there were 9. For this educational work the Yale School pays a portion of the salary of the instructor.

In 1927 St. Raphael's Hospital and the William Backus Hospital, Norwich, each sent 2 students to receive the same two months unit.

Staff. All new nurses who have had no experience in this type of work receive practically the same instruction as that given the undergraduate students. This, however, is sometimes extended for a second two months period, and longer if necessary for the individual nurse. Six months is considered the "probationary" period. Besides this initial educational instruction of staff members, staff conferences are held weekly, which have definite programs planned with the idea of continuing the educational program for both the newer and older nurses. Round tables

both with general and with specialized supervisors also play an important part in the educational program. One of the most valuable policies of the organization along this line is that of sending the nurses to conventions and meetings and of giving them opportunity to obtain special instruction which keeps them in touch with new developments in the field of public health nursing.

Records. The statistical department of the organization is well equipped and staffed by six workers, under a registrar. Complete statistical data are kept of morbidity rates in relation to the services rendered. These data seem to us to meet the various needs for use in comparison with the work in other cities, in relation to the activities of the city Health Department and for comparison over a period of years.

Salaries. Staff. The salaries paid to staff members are as follows: $100 for first six months, or until accepted as a staff member; $110, second six months; $115, second year; $120, third year; $125, fourth year, maximum.

In considering a salary scale it is necessary to compare it with other salaries in the same and other communities, to costs of living and to the possibility of an adequate supply. In spite of the fact that data for other cities have been collected for 1926 it is exceedingly difficult to make any fair comparison since it is not possible to gauge the relative advantages offered in the way of educational opportunities, sick leaves, etc., for which the New Haven association seems to provide in an unusually fair manner. Also, one finds that salary rates are continually changing, so that what was an average minimum for 1926 would not be so in 1927.

Therefore, the most rational basis for consideration would seem to be an actual study of the situation here in

relation to the supply of desirable nurses, the demands of the work, the problem of staff turn-over and the cost of living in this community. We would suggest a shorter probationary period, an increase at the end of the first three months and the maximum beginning with the third year of service.

Department of Home Economics. One of the most interesting and important phases of the work of the Visiting Nurse Association is the department of Home Economics with its staff of a supervisor and assistant and five visiting housekeepers, which has been treated in some detail in Chapter XVIII. In 1926 this department made 4,834 visits to assist in housekeeping and housekeeping problems, budgeted 124 families and made 722 home visits for instruction and advice in matters related to diet and the preparation of food. This department works very closely in cooperation with the nursing service, the dietitians acting as specialists in their field and the housekeepers helping to produce results in some of the most difficult situations. A study might well be made as to the desirability of laying greater emphasis on the nutrition rather than the home economics phase of the program and working in this regard more through the nursing staff itself than is at present the practice.

4. **The Crippled Children's Aid Society.** The general organization of the Crippled Children's Aid Society has been discussed in a preceding chapter (XIX).

The nursing service of the organization appears to be of the highest quality and will be strengthened by the greater emphasis on home physiotherapy now in process of development. The record system, on forms recommended by the National Organization for Public Health Nursing,

supplies fairly complete case records for each patient, including necessary social data.

From the standpoint of nursing service, it seems unfortunate that the work of the Society's nurses should be isolated from the rest of the public health nursing service of the community. Experience has demonstrated again and again that efficiency is vastly increased when a specialist likes Miss Besom works, not alone, but in cooperation with a generalized nursing service, teaching a large group of district nurses to render ordinary routine services and dealing herself with the more complex cases.

5. **New Haven Dispensary Nursing.** Since we are including in this survey the work of the nurses in the City Venereal Disease Clinic, and since the work of the nurses in the various clinics of the New Haven Dispensary is being developed along similar lines in the closest cooperation with public health activities of the community, it seems desirable to include a brief report of these services, as they relate to other community work.

The Nursing Staff at the New Haven Dispensary represents a practically unique situation in this country in that the head nurses in children's, tuberculosis, special medical (venereal disease), medical, surgical and women's clinics are graduate nurses with a background of experience in public health work and consider their work as a part of the community public health activities. The object of their work in the clinics, as expressed in one of their reports, is "to give a good nursing service in the clinic, to follow the patient in his home through cooperating with public health and social agencies, when indicated, and to keep in touch with him in the hospital, should his condition warrant hospitalization."

Therefore the following report of outgoing communications from the nurses of the department seems to us interesting, as indicating the possibilities for the development of this type of nursing service in clinics which cooperate with community public health agencies:

July 1, 1926 to June 30, 1927.

An analysis of the written communications from the Nursing Service to the Dispensary and outside agencies is as follows:

NEW HAVEN CITY DEPARTMENT OF HEALTH.

Total number of reports		2930
of diagnosis or condition	1751	
of treatments or tests given in Dispensary	547	
of treatments advised directly to patients	622	
Total number of requests		1322
for appointments	1134	
for treatments or advice to be given by Superintendent of Health Nurses	50	
for information	138	

NEW HAVEN VISITING NURSE ASSOCIATION.

Total number of reports		6926
of diagnosis or condition	4075	
of treatments or tests given in Dispensary	1123	
of treatments advised directly to patients	1009	
of babies' formulae given	162	
of newborn babies	317	
of recommendations for children's camp	134	
of procurable source of infection of cases of tuberculosis	106	
Total number of requests		2643
for appointments	1988	
for treatment or advice to be given by Visiting Nurses	223	
for information	432	

ALL OTHER AGENCIES.

Total number of reports		977
Total number of requests		557
for information	198	
for appointments	354	

One monthly report indicates that contacts were made with 11 different nursing groups, 8 social organizations, 4 sanitariums, 1 health officer, 1 department of education, and numerous private physicians.

Reports coming from outside agencies relating to the patients are not communicated directly to the clinic nurse. This fact greatly interrupts the continuity of service between the community nurses and clinic nurses.

6. **The Queen's Daughters Association of New Haven.** In June 1926, Professor Hiscock made a survey of this association at the request of the Committee on Social Work of the New Haven Community Chest. Since his report covers much of the material needed for the survey in relation to its nursing activities, we are taking the liberty of quoting from Professor Hiscock's report as follows:

The association was organized in June 1903 for the primary purpose of assisting the Sisters of the Holy Ghost in nursing the sick poor and in looking after "the spiritual, corporal and intellectual welfare of poor Catholic children." There were no visiting nurses at this time in the city. For three years four Sisters were employed, but since that time only two have been maintained.

The work of the association as outlined in the 1925 booklet of the Community Chest is as follows:

"This association assists the two Sister nurses in keeping a supply closet of clothing and other articles needed in their work, and is also supervising a visiting housekeeper, who is carrying aid, direction and kindly advice to many homes who need her. Many children, hitherto kept away from school by 'little mother' duties, are relieved by it and returned to their studies."

The Sisters do their work in New Haven, East Haven, Westville, West Haven, and Hamden. As above stated,

one visiting housekeeper is employed for the same territory. The work is not confined entirely to any one group or religion, although the majority of cases are among Catholics. Before undertaking the field visiting, and during the evening, the nurses render such nursing care as is necessary to the young women living at St. Joseph's Convent. The salary of each of the two Sisters who do home visiting is $110 a month, exclusive of room and board provided by the Convent. The organization of the Queen's Daughters has a paid up membership of 100, but approximately 150 other friends assist in card parties and in Christmas sales which are held to raise funds in addition to the $3,420 supplied by the Community Chest ($3670 for 1928). The total budget of the Queen's Daughters in 1926 was $4,420.

The scope of work of the Association is indicated by the fact that in 1925 the Sisters made 4552 visits to 220 families while the housekeeper made 1200 visits to 16 families which indicates an intensive type of service. The majority of cases cared for by this organization are old people, frequently involving special problems which occupy the attention of the Sisters while they are giving nurse care. It will be noted that an average of over 20 visits is made yearly to each patient. In fact, the actual number of visits to patients is greater than this figure because there are frequently two or more patients in one family, and consequently the number of **families** served is less than the number of **patients** above indicated. It is also noteworthy that an average of from 75 to 84 visits by the visiting housekeeper are made annually to each case served.

Because of the pressure of work and the lack of clerical assistance, the patients visited are not classified according to cause of illness or reason for visit. In order to obtain

a clearer picture of the type of cases visited by the nurses and of the service rendered, a personal visit was made on Thursday, June 24th, 1926, with the sister nurses to a group of cases considered typical, eight in number. These cases made up approximately one-fourth of the total cases under care. All of the cases seen were suffering from chronic complaints and five were in bed, while all but one of the eight were apparently helpless. All were old people. The visitor was impressed with the devotion to duty of the Sisters and with the confidence of the patients in the service rendered. Approximately two-thirds of the cases were distinctly needy cases, while the remainder were in families apparently just able to meet their current expenses.

The relation of the Queen's Daughters to other organizations in the city seems to be cordial, although not intimate. The nurses from time to time refer cases to physicians, to dispensaries and to hospitals, but the number thus referred in a given year is not available. It is not their practice to take over a case which is being carried by another nursing organization, except in rare instances when some special reason is indicated and they are requested to do so. Undoubtedly, certain types of cases, psychologically and otherwise, respond to the care given by the Sisters more readily than to any other available service. It is also interesting to note that certain of the patients visited expressed their particular desire to have these Sisters visit them in preference to other nurses because this insured the visit of the same nurse from day to day.

It appears that this is an organization of long standing which maintains a limited nursing staff particularly desired and utilized by special groups of the city. The nursing staff of the Queen's Daughters is confined largely to

chronic cases, necessitating an intensive type of service, although acute cases are also cared for upon request. Furthermore, this service combines bedside nursing care, social service work, and relief. It seems fair to state that from one fourth to one third of the time of the sisters is spent in social service work and in rendering relief to needy patients, rather than in what may be strictly considered as nursing. Many of the cases visited require considerable assistance in the way of food and clothing. The clothing is delivered by the sisters, while much of the food is distributed to the families from the Convent and paid for by the Queen's Daughters.

7. **Private Duty Nursing.** Since a large proportion of the population of New Haven is able to use the services of full time private duty nurses and attendants, it seemed desirable to include some statement of this situation as it obtains in New Haven.

On January 26, 1928 the Central Registry for Nurses listed:

216 graduate nurses, 116 undergradutes.

Of these, on February 14, usually a busy time of the year,—40 graduates were unemployed (nearly one-fifth); 12 undergraduates were unemployed.

The Registrar states that in her estimate there is more than an adequate supply of nurses to meet the needs of this community except under unusual circumstances. It was necessary for this registry to refuse only 180 out of 5,239 calls last year. This represented no special group of cases except possibly communicable diseases. Many nurses refuse these cases when they have had no special training in them during their nursing course.

This condition of over supply is in accord with the findings of the National Committee for the Grading of

Nursing Schools. A recent study of the supply and demand of nurses indicates that except for a very few sections there is a larger supply of nurses than the number for whom it is possible to find adequate employment.

8. **Conclusions and Recommendations.**

Health Department Nursing. The health department nurses are doing an excellent piece of work in the schools of New Haven, cooperating in an unusually effective manner with the other nursing agencies of the city for the benefit of school children.

School nursing is apparently one of the most difficult of special fields in public health. It requires cooperation, not only with the usual community agencies related to the home, but especially with the groups interested in the child in school, it demands very special knowledge of certain educational problems as well as rather unusual capabilities. In few places has it developed to the extent of its seeming possibilities, therefore, these recommendations relate more to the great opportunities of this field of work than to any defects in the present program.

Recommendation 65. That an assistant supervisor of school nursing be added to the Bureau of Nursing to provide for more constant supervision of the work and greater attention to the development of the program of school nursing.

Recommendation 66. That as soon as possible the program of school nursing be extended to the high schools, to be carried by nurses possessing the qualifications of high school teachers.

Recommendations 67. That an educational program for new nurses and those now on the staff be outlined along

the lines of the year's course in school nursing recommended by the National Organization for Public Health Nursing, and that time and salary adjustments be made to permit and stimulate the nurses to obtain for themselves this special preparation.

Recommendation 68. That some plan of cooperation be worked out between the school nurses and the Visiting Nurse Association, and the school nurses and the Crippled Children's Aid Society by which no two nurses shall be visiting in the home at the same time, and also that consideration be given to some plan of extending the cooperation by which certain cases might be referred to home agencies where the problem is more definitely related to the home situation than to that of the school.

Relations between the Health Department and the Visiting Nurse Association. It has been pointed out that two years ago the Health Department delegated its tuberculosis nursing to the Visiting Nurse Association with admirable results in the promotion of efficiency and economy. It is suggested that the same course might well be followed in regard to the welfare nursing of the department. These two types of nursing service are essentially akin to the routine home service of the Visiting Nurse Association and may be logically differentiated from such work as that of the communicable disease and venereal disease nurses, which is largely of a regulatory nature and from that of the school nurses which is to a large extent carried on in the schools rather than in the homes. We believe that it is entirely reasonable for the city, while retaining its ultimate and inalienable authority, to secure the performance of particular functions by volunteer organizations acting as its agents; where, as in the case of home nursing and polyclinic service, there are marked advantages is such a course.

If, however, the city is thus in increasing degree to make financial appropriations for the carrying on of health activities by volunteer agencies such as the Visiting Nurse Association, it is essential that machinery should be provided by which it may be rendered certain that the city knows what it is getting and gets what it needs. The city, while it may properly be prepared to delegate the execution of any of its functions so long as such a course is profitable, must, of course, be able to terminate the agreement at any time and must be able to inform itself from day to day as to the extent to which its needs are being met. In order to attain this end in the case under consideration, we would make the following recommendations.

Recommendation 69. That the welfare nursing of the Health Department should for the present be provided for by an arrangement with the Visiting Nurse Association by which it could be conducted as a part of the generalized community home nursing program, the Association to act as the agent of the Department in this regard on a mutually satisfactory basis.

Recommendation 70. It is suggested that the Visiting Nurse Association should appoint a special committee on health department relationships (of which Dr. Rice who is a member of the Visiting Nurse Association board might naturally be chairman) to have special charge of the work done by the Visiting Nurse Association for the department, and that by agreement between the Health Department and the Visiting Nurse Association a member of the supervisory staff of the Visiting Nurse Association should be specifically appointed as a liaison officer between the two organizations. In order to emphasize the reality of Health Department control, a part of her salary might well be

directly paid by the city Department of Health so that she would be definitely responsible to both organizations; and she might have a desk in the City Hall and be recognized as a regular member of the staff of both the Health Department and the Visiting Nurse Association.

Visiting Nurse Association. After studying the history and work of this organization one cannot but agree with the feeling which prompted Dr. Patterson of the National Tuberculosis Association in summarizing his report of the work of this Association in the tuberculosis field, to say, "Your investigator has conferred with nursing associations and observed their work in numerous communities. He knows of no other association so well organized and administered as the New Haven Visiting Nurse Association."

In recommending that certain nursing activities now carried on by other services be given over to the generalized program of the Visiting Nurse Association or more closely linked with it, a great responsibility is being put upon this organization to maintain in its enlarged program the advantages of the smaller and more individualized pieces of work.

In order to do this adequately it should be the goal of the organization to obtain the help of specialists in each service it is maintaining, and for which specialized work has been developed. Already the organization has two specialized supervisors in tuberculosis and in the combined fields of child welfare and maternity. It would seem desirable to expand this aspect of the work to have one supervisor each in the Maternity and Infant Welfare fields. Among the newer and most successful developments in specialized supervision has been that in the field of mental

hygiene. A notable example of this is to be found in the work of the Boston Community Health Association which at the present time has two mental hygiene supervisors. These supervisors in Boston have found their work through the nurses' contact in the home a most satisfactory way of dealing with early mental cases. It may be that through the development of this work one of the most difficult and increasingly important problems of public health (the early detection and treatment of important mental deviations) will be met, and it is certain that the staff nurse would find a mental hygiene viewpoint invaluable in the conduct of her daily work. It would seem very desirable, therefore, that such a worker should be added to the Visiting Nurse Association staff. The hearty cooperation of the Society for Mental Hygiene could be counted on in such a development.

It seems to us that the success of generalized nursing, carried out by a relatively large staff of professional workers depends not only upon the administrative policies as such, the type and amount of supervision, and the qualifications of the staff members, but also upon the extent to which individual nurses are permitted and stimulated to contribute to the development of the work along the lines of their own special interests and capabilities.

Recommendation 71. That a supervisor of mental hygiene be added to the staff of the Visiting Nurse Association to develop this important phase of the work in the homes.

Recommendation 72. That the maternity program be developed along the lines suggested in the report on this service, including specialized supervision in both maternity and child welfare.

Recommendation 73. That careful consideration be given to the Home Economics Department of the Association as regards the balance between nutrition and general home economics and in respect to the part played in the program by the specialists and by the staff nurses respectively.

Crippled Children's Aid Society. The highly important service performed by this society in the field of orthopedic nursing would be greatly strengthened by closer affiliation with the generalized home service of the Visiting Nurse Association.

We would therefore urge as

Recommendation 74. That the Crippled Children's Aid Society confer with the Visiting Nurse Association with a view to some cooperative arrangement which will secure maximum results in the nursing care and follow-up of orthopedic cases.

Queen's Daughters. In our visits with the Sisters of the Queen's Daughters, it was very evident that their contact with their patients was excellent and that they had been providing help to certain chronic cases for years in a way which has brought great comfort to these people and doubtless has often made possible the maintenance of a home. One case visited, of chronic arthritis, has been on the lists over fifteen years with almost daily visits a great part of the time. The Sisters have no fixed rule in relation to whether the patient is under the supervision of a physician or not. Several cases have had no physician for several years (everything possible apparently having been done previously). A certain number of the cases, on the other hand, are acute illnesses, in which the services required are those of the usual visiting nurse type.

The problem of the chronic case in visiting nurse work is always a vexing one. In combination with a program for the care of acute cases, child welfare work, etc. the chronic case often seems to take a relatively large amount of time away from the more educational and highly skilled or specialized work of the public health nursing association. Sometimes during periods of stress these chronic cases may be somewhat neglected.

In view of these facts, it appears that the Queen's Daughters are performing a highly useful function, but it would seem desirable that an attempt be made to develop some more definite plan of cooperation with the Visiting Nurse Association by which certain types of chronic cases might be referred to the Sisters from the Visiting Nurse Association and acute sickness and all cases of tuberculosis or child welfare work for which the Visiting Nurse Association maintains specialized supervision should be referred by the Queen's Daughters to the Visiting Nurse Association. In this plan some consideration might also be given to a distribution of cases which will tend to lessen the travel over a widely separated area on the part of the Queen's Daughters. This should be possible since of necessity the Visiting Nurse Association will still continue to carry a considerable number of chronic cases as in the past.

Recommendation 75. That the Queen's Daughters and the Visiting Nurse Association work out a cooperative plan by which certain types of chronic cases are referred by the Visiting Nurse Association to the Queen's Daughters and other types of cases for which the Visiting Nurse Association is especially well equipped to care, are referred to the Visiting Nurse Association by the Sisters.

Recommendation 76. That the Queen's Daughters consider the possibility of some volunteer auto service,

even if for only one or two days a week, or perhaps one or two hours in the morning to reduce the amount of time wasted in reaching widely separated cases.

Recommendation 77. It is suggested that efforts be made to develop and maintain a simple record system which will more adequately show the amount and type of service rendered by the Queen's Daughters.

General Recommendations:

Cooperation. The spirit of cooperation between the various nursing organizations and other social agencies in the city seems to be splendid. However, there is no definite plan by which the various public health nurses may meet at stated intervals to discuss their problems and plan for closer team work. Therefore:-

Recommendation 78. It is recommended that a Joint Council of Community Nursing be organized which shall include the City Health Department nurses, the Visiting Nurse Association nurses, the Crippled Children's Aid Society nurses, the Queen's Daughters' nurses, the Dispensary nurses, and representatives of the three schools of nursing, with the purpose of making possible better understanding of community problems and better methods of cooperation.

Recommendation 79. That efforts be made during the next five years to increase the total public health nursing staff of the community at the rate of three new nurses a year in order to bring the total up to a completely adequate figure.

Occupational Therapy. At the present time there is no provision in New Haven for occupational therapy work under trained supervision, although in hospitals or in

homes this need is felt to be a very important one in relation to nurses' work with chronic and convalescent cases, especially in the orthopedic field.

Recommendation 80. Therefore, it is recommended that the Connecticut Occupational Therapy Society be invited to make a study of the situation with a view of analyzing the need and possible facilities for such work, both in the community and in the hospitals.

Chapter XXI.

MENTAL HYGIENE.

1. **Responsibilities and Opportunities of Connecticut in the Field of Mental Hygiene.** There is no problem of public health which is so important and at the same time so difficult of solution as that which relates to Mental Hygiene. It is estimated that there are today in the State of Connecticut some 6,000 persons suffering from mental disease, and some 2,000 feeble-minded persons, sufficiently abnormal to be in need of custodial care. There are perhaps 20,000 individuals of a mentality low enough to benefit by special supervision, though not requiring institutional care; and there are nearly an equal number of persons suffering from mental maladjustments in occasional or mild degree who could be helped by psychiatric science. In the average family, throughout the community, it is probable that the handicap due to mental maladjustments—great and small—is as great as the handicap due to all other diseases and defects combined.

Connecticut has certain traditions and certain institutions which in an unusual degree favor a sound attack upon this important problem. It was in Connecticut just twenty years ago that Clifford W. Beers wrote The Mind That Found Itself, which has had so much influence in popularizing the modern viewpoint in this field, and in the same year he established the Connecticut Society for Mental Hygiene, the first organization of its kind in the world. The State Department of Health at Hartford was the first state Department in the United States to establish a division of Mental Hygiene (of which Dr. Harold A. Bancroft is now Director) in 1920. Yale University has

developed a program of Mental Hygiene for its student body which is unique in scope and quality, and the Yale Psycho-Clinic under Professor A. L. Gesell has carried the study of mental defect back into the early years of childhood with a vigor and completeness nowhere else attained. With such assets, and in a small and compact state like Connecticut, we have the opportunity of building up a state program of unequalled excellence.

On the other hand, as will be indicated, there are defects in existing machinery which are as glaring on one side as are these advantages on the other. The state institutions for the care of mental disease and defect are woefully inadequate. There is not a single psychopathic ward in any public hospital of the state. Clinic service, while excellent in some communities, is wholly lacking or unsatisfactory in others; and the entire state machinery is uncentralized and sometimes duplicating or conflicting.

2. **State Facilities for Custodial Care.** The problem of institutional care for mental disease and defect has been given careful study by two special commissions, the State Psychopathic Hospital Commission (Dr. Paul Waterman, Chairman) which reported in 1922 and the Commission on State Institutions (John M. Wadhams, Chairman 1925-6, Seth L. Pierrepont, Chairman, 1926-7, Dr. W. C. Rappleye, Advisor) which made its report a year ago. These Commissions brought out the following facts.

For the care of mental disease the State has two institutions, the Connecticut State Hospital at Middletown and the Norwich State Hospital. The former had, in 1926, a normal capacity of 2,200 and an actual population of 2,875. The latter had a normal capacity of 2,000 and an actual population of 2,030. Thus, in spite of the fact that Con-

necticut has more beds in proportion to population for mental disease than any other states except New York and Massachusetts, one of its institutions is full and the other is overloaded to the extent of 25 per cent of its capacity. According to the standards agreed upon by authorities in this field, there should be provided one institutional bed for mental diseases for every 250 persons in the population, which would require 2,000 more beds for Connecticut. The need seems clear for a third state institution of this class which should logically be located in the south-western portion of the state, a need in which New Haven has therefore a direct and immediate interest.

With regard to the care of mental defectiveness, the situation is even worse. Here, only the Mansfield State Training School and Hospital is available, with a population of about 700, which could be increased to 800 with an adequate water supply. Connecticut ranks twenty-third among the states in this respect, with provision for 33.9 beds per 100,000 population, as compared with 82.9 beds provided by Massachusetts, the state which ranks highest. A total of 2,000 beds of this class should be provided without delay. In addition, 600 beds are needed for the care of epileptics. The 1927 Commission therefore recommended that the capacity of the Mansfield Hospital should be increased to 1,500 and a second institution for the care of the feeble-minded and epileptic established in the south-western part of the state. At the present time, the feeble-minded children of the state are in large measure being housed in the County Homes, often without recognition of their status or adequate provision for their care.

In spite of the irrefutable case presented, the Legislature of 1927 did nothing to remedy the situation except to provide for an increase of 100 beds in the capacity of the

Mansfield State Training School, for the addition of a contagious disease ward and for other minor improvements.

3. **The Need for Psychopathic Ward Facilities.** In addition to institutions for more or less formal custodial care, every large community should have in connection with its general hospital a psychopathic ward for "first aid to the mentally injured" where cases of mental disease can be received without legal commitment for examination and treatment. Twenty per cent of the patients entering the Boston Psychopathic Hospital are never subjected to any legal procedure at all, but are handled entirely by the hospital and discharged as cured. Especially in a center of medical education like New Haven, such a psychopathic ward is a vital essential. It is a part of the Yale Medical School program (to be discussed in a succeeding paragraph) to provide such a ward, and from the community standpoint it is to be hoped that the consummation of this plan may not be long delayed.

4. **Mental Hygiene Clinics.** The third essential element in the mental hygiene program is the provision of mental hygiene clinics for the detection and treatment of the milder cases of mental maladjustment, not sufficiently serious to require hospitalization but in urgent need of the highest type of expert supervision. The human mind is a dangerous thing to play with; and such clinics must be staffed by psychiatrists, psychologists and psychiatric social workers thoroughly trained for their job if they are to do good and not harm. When so staffed, the results they may accomplish are among the most beneficient that can be achieved in any field of social medicine.

Connecticut is on the whole fortunate in respect to such facilities. It has ten more or less adequate clinics now

available as follows, (including only those which aim to give more or less general psychiatric service to patients of all ages and excluding special school and court clinics).

Affiliated with the Connecticut Society for Mental Hygiene. Clinics at Bridgeport, New Haven and Waterbury.

Affiliated with State Department of Health and Middletown State Hospital. Clinics at Bristol, Meriden and Middletown.

Affiliated with Norwich Hospital. Clinic at Norwich.

Affiliated with the Hartley Corporation. Clinic at Hartford.

Affiliated with local hospitals. Clinics at Greenwich and Stamford.

On the other hand, it should be pointed out that while some of these clinics are of the highest calibre, others are inadequately staffed with psychiatrists or psychiatric social workers or both; and that while some of these clinics are controlled by branches of the State Society and all make reports to the State Department of Health, these reports are only made by courtesy and there is no real central authority to keep them up to standard or to prevent overlapping and duplication.

The New Haven clinic is an altogether admirable one. It is managed by the New Haven Branch of the Connecticut Society for Mental Hygiene (Mr. Lewis H. English, President), a member organization of the Community Chest. The clinic is held on two afternoons a week at the New Haven Dispensary and its medical service is provided by the Mental Hygiene Department of the University, (Dr. L. J. Thompson being at present the physician in charge). Miss Henrietta Thatcher, with one full-time assistant and several volunteers, does the follow-up. In the year 1926, 725 patients were handled at this clinic, and its

work included 927 psychiatrist's interviews, 60 psychological examinations, 837 office and clinic interviews with the social service staff, and 1,818 outside social service interviews. The clinic renders a complete psychiatric, psychological and social service. Preventive work is its keynote. Among adults, neurotic cases predominate, with a few epileptic, defective and psychotic patients. Among children, behavior problems are dealt with, varying from minor bad habits and speech difficulties to serious delinquencies. The emphasis is shifting from adults to children, the older cases remaining fairly constant while juvenile patients are rapidly increasing in number—an excellent sign. Of 725 cases treated during 1926, 52 were discharged as "practically recovered," and 153 were sufficiently improved to be left to themselves or to their families. One hundred thirty-eight were referred to other agencies, 20 to other clinics or hospitals, 16 to private physicians, 36 to state institutions. Two hundred and seventeen remained under care at the end of the year, and 93 failed to report back, left town, or were discharged against advice. During the past four years, only one suicide has occured among all the patients under care, and there has not been a single homicidal attempt.

The grant for the work of this clinic by the Community Chest has in the past been insufficient to cover its necessary cost, and the State Society has been forced to use funds subscribed outside New Haven to subsidize this local enterprise. With recently increased appropriations, ($7,200 in 1926, $7,700 in 1927, $8,700 for 1928), New Haven is carrying its own load and it seems possible to provide in some measure for future increases by developing an income fom patients able to pay for the service which they receive. It should be noted, however, that the demand for

service is a constantly increasing one. During the last six months of 1926, the number of cases under care increased one-third as compared with the first half of the year.

5. **Psychiatry in the Courts.** One of the most important applications of mental hygiene is to be found in its relation to correctional procedure. The Yale Psycho-Clinic sets aside a special day each week for the examination of cases submitted by the Juvenile Court, and the Neuro-Psychiatric Clinic is, of course, available for adult cases. The courts are, however, still sadly lacking in a comprehension of the extent to which their dealings with a given case should be guided by knowledge of the determining factors really at work in the given instance. In almost all other fields of human thought, we are today interested to know why a catastrophe really happens and how to prevent its happening again. In law, however, we are apparently satisfied to assume that social maladjustments are caused by deliberate moral depravity and can be cured by fear—both assumptions which students of human behavior know to be generally false. It is most gratifying to note that representatives of the Yale Law School and the Yale Medical School are now considering this problem in joint conferences. It seems reasonable to hope that such collaboration may open the way to a new and more enlightened system of legal procedure,—perhaps one, as has been recently suggested, in which judges and juries would determine the mere fact of social maladjustment, leaving to commissions of experts on human behavoir the task of diagnosing and prescribing the treatment necessary in the individual case.

6. **The Problem at Springside.** A particularly urgent and difficult problem exists with relation to the psychiatric cases temporarily under detention at the Springside Poor

Farm. This is at present the only place to which persons coming to the attention of the police as acting in a mentally abnormal manner can be sent for observation; and 20-30 persons are received at the Poor Farm for this purpose every year. When they are so received, however, there is no proper place to keep them and not even a night attendant to look after them, let alone the psychiatric supervision which they require. This is, of course, only one special instance of the urgent need for a psychopathic ward in New Haven to which reference has been made in an earlier paragraph; but it is a particularly glaring one.

There is only one possible way to give these unfortunates the care they need,—and that is in connection with a general hospital having a well-equipped psychiatric service. It seems certain that the New Haven Hospital can not care for such cases without accommodations which it does not now possess; but it would certainly seem desirable that the Department of Charities should take the matter up with the authorities of the hospital for discussion.

7. **Child Guidance Clinics.** Closely allied to the mental hygiene clinics discussed in an earlier paragraph are the Child Guidance clinics which progressive communities are now providing for the bringing of scientific knowledge in regard to behavior problems down into the age period when the most fundamental prevention is possible. They really differ from the mental hygiene clinics only in that they deal entirely with children, and with less acute manifestations of maladjustment.

New Haven is particularly fortunate in this respect in possessing Dr. A. L. Gesell's Yale Psycho-Clinic on Hillhouse Avenue. Dr. Gesell has extended the study of human behavior back into the period of early infancy with astound-

ing success, and his clinic is internationally famous as a center of research in this field. It is open all day and every day from September 1 to July 1 and is staffed by a psychiatrist, a pediatrician, a psychologist, a statistician, a guidance worker, four graduate students and a clerk. In the university year 1926-27, 552 visits were made to this clinic by 519 individuals (including 375 new cases) of whom about one-third were under 3 years of age, one-third between 3 and 6 years, and one-third of school age and over (including two adults). These cases were referred from some twenty agencies. The value of such work at the age when the fundamental mental impressions are received and the fundamental mental habits formed is incalculable.

The City Department of Education has an excellent system of psychological examination and special class work, operated under the direction of Miss Norma Cutts (with the cooperation of the Yale Psycho-Clinic on special cases.) During the year 1926, 12,500 standard group tests and 580 individual psychological tests were made by Miss Cutts and her staff.

The State Department of Education in January of the present year opened a clinic at the Normal School for dealing with problems of school exclusion. The exact purpose of this clinic and its relation to the rest of the community machinery does not seem very clear.

The Civic Protective Association, the Children's Community Center and the New Haven Branch of the State Bureau of Child Welfare cooperate closely with the two New Haven clinics.

8. **General Educational Program.** Finally, a well-planned program of community education must form an essential part of any plan for the furtherance of mental hygiene.

The Connecticut Society for Mental Hygiene and its local branches are doing admirable work along this line. The Mental Hygiene News is issued monthly, and newspaper publicity has been effectively utilized. The New Haven Branch of the State Society has arranged for special instruction to mothers at the child health conferences of the Visiting Nurse Association, and every year provides, with the aid of the State Society, for public lectures. The Association arranged a course of five lectures recently given at the New Haven Normal School, and cooperated with other organizations in arranging a course of sixteen lectures by Dr. L. A. Lowrey to a group of social and health workers which is now in progress.

9. **Conclusions and Recommendations.** In general, New Haven has a rare opportunity to build up a mental hygiene program of almost unique completeness and efficiency. It is most essential for this purpose, however, that state institutional facilities should be greatly expanded and the whole state program coordinated and standardized. Whether it should be centralized, as the Commission on State Institutions urged, under a new State Department of Mental Hygiene, or under the State Department of Health or under a joint **ex officio** board representing the State Departments of Health and Education and the State Institutions, or in some other way, seems uncertain. It is surely essential that some coherent state program should be formulated and given effective backing in the 1929 legislature. The State Society for Mental Hygiene, the logical body to perform such a task, has already planned to undertake it.

Locally, machinery for dealing with mental disease and defect is developing along sound lines, although we believe that the question of payment for treatment at the Neuro-

Psychopathic Clinic should receive careful study. The need for a psychopathic ward in New Haven is of course acute; but this, and the general question of local clinic coordination, must await the completion of Yale's Mental Hygiene program, whose fulfilment will go far to make all desirable things possible.

Dean M. C. Winternitz in his annual report to the President of Yale University for 1925-26 noted that plans were already in process of preparation for an "Institute of Human Behavior which is to be located in the vicinity of the School of Medicine and the New Haven Hospital. The building will include facilities for the Department of Psychology, the Institute of Experimental Psychology, the Department of Research in Child Hygiene, and the proposed work (including wards) in Psychiatry and Mental Hygiene. It is believed that the realization of this concept will accelerate the progress of the fundamental sciences associated with behavior, will remove the artificial barriers that exist between mental hygiene and psychiatry, as well as between psychiatry and psychology, and will stimulate the much desired cooperation which is essential between the groups engaged in the study of normal and abnormal mental reactions."

Such an institute as that here visualized would not only offer the natural coordinating center for all the mental hygiene work of New Haven, but would also go far to solve the greatest difficulty in the entire field, the crying need for soundly trained expert workers.

Recommendation 81. That the Connecticut Society for Mental Hygiene be encouraged to complete its contemplated survey of the mental hygiene problems of Connecticut with a view to the formulation of a sound State program of constructive development in this field.

Recommendation 82. That the Community Chest should take an active part in urging upon the 1929 Legislature the vital necessity for immediate provision of some part of the resources for institutional care of mental disease and defect which are so urgently needed.

Recommendation 83. That the Chest should ask the New Haven Branch of the Connecticut Society for Mental Hygiene to study and report upon the possibility of increasing the financial resources of the Neuro-Psychopathic Clinic by collecting the costs of services rendered from those who are able to meet them.

Recommendation 84. That every possible public support should be given to the Yale program for an Institute of Human Behavior (to include a psychopathic ward) and that the local clinic program should be continued along its present lines until this Institute is organized.

Recommendation 85. That the Department of Charities should discuss with the authorities of the New Haven Hospital the possibilities of securing provision for the care of mentally diseased persons temporarily committed to its care for observation.

Chapter XXII.

INDUSTRIAL HYGIENE.

(With the cooperation of Leonard Greenburg, W. E. C. Allison, E. Icaza and Helen B. Matthewman.)

1. **Importance of the Problem.** The development of machinery for the promotion of the safety and health of the industrial worker is one of the most outstanding tendencies of the past quarter of a century. The significance of preventive medicine and surgery as a factor in industrial production was completely unrealized in the United States fifteen years ago. Accidents or disease brought on directly or indirectly by conditions of the factory environment, were treated individually as private cases and little or no attempt was made to formulate a plan for their relief or prevention. With the passage of the Workmen's Compensation Acts in various states, the heads of industrial concerns were brought face to face with the problem, and as in most cases where the issues of humanity are valued in dollars and cents, surgical risks began to receive attention and corrective action. Engineering and Medical Departments were organized in some of the larger plants with the idea of studying the problem from the point of view of prevention rather than cure—and, thus, gradually, the new science of industrial hygiene arose. Industry has adopted the physician not from altruistic or humanitarian motives, but because preventive medicine practiced in the factory is sound business economics. Routine physical examinations on admission and at regular intervals, have been established, treatment of sickness, control of sanitation, general publicity on health

matters, housing and food, are all part of the industrial physician's work. His object is to keep the personnel of the factory working at its maximum efficiency—from the man who purchases the crude substance to the man who sells the finished product. In order to do this, he must also study a long chain of processes and at each link in the chain he must consider the effect of the particular environment at that stage of the process on the health of the person performing it. It is evident, therefore, that strict cooperation with the engineering, chemical, sanitary and other departments of the factory is essential.

This new viewpoint has to some extent been adopted in New Haven but, as we shall see, only to a limited extent as compared with its possibilities as recognized by progressive industries in other communities.

2. **State Legislation and State Department Organization Relating to Industrial Hygiene.** The basic influence in industrial hygiene in America has been the passage of Workmen's Compensation Acts, which made it obvious that a certain amount of attention devoted to safety and health was essential to sound business in order to escape a heavy burden of insurance costs.

The Connecticut Compensation Law went into force January 1, 1914 and is on the whole an excellent piece of legislation. It covers a larger proportion of persons than do the laws of many states. Its financial provisions are reasonably liberal, including medical and surgical aid and hospital service and the system under which it is administered is flexible and efficient.

It is a source of satisfaction that Connecticut is one of the five states (the others being California, Massachusetts, North Dakota and Wisconsin) which includes a broad cov-

erage of occupational injuries under its compensation law. In the past, indeed, the interpretation of this phase of the law has been unreasonably broad as regards contributory factors aggravating previously existing disease. The law was modified in this respect by the 1927 legislature, a step which was undoubtedly a sound one.

In addition to compensation acts which provide an indirect but powerful stimulus to employers to prevent preventable accidents and diseases many states, such as New York, Ohio and New Jersey, have effective direct legislative and administrative machinery for enforcing certain minimum essentials of health and safety in the factory.

In this respect Connecticut is less adequately equipped for service. Section 2345 of the Revised Laws of 1918 provides that "all factories and buildings where machinery is used shall be well lighted, ventilated and kept as clean as the nature of the business will permit"; and that "the belting, shafting, gearing, machinery and drums, of all factories and buildings where machinery is used, when so placed as, in the opinion of the commissioner, to be dangerous to the persons employed therein while engaged in their ordinary duties, shall, as far as practicable, be securely guarded." Section 2350 provides that "every employer whose business requires the operation or use of any emery, tripoli, rouge, corundum, stone, carborundum, or other abrasive, polishing or buffing wheel, in the manufacture of articles of metal or iridium or whose business includes any process which generates an excessive amount of dust, shall install and maintain in connection therewith such devices as may be considered necessary by the commissioner and the State Department of Health to remove from the atmosphere any dust created by such process."

There is no legal provision whatever on industrial poisonings; and such general regulations as those in regard to light and ventilation and dust removal have little real force unless interpreted by experts. In states like New York and New Jersey there have been created special Industrial Commissions with power to formulate specific regulations carrying out the intent of such general laws; and furthermore the Labor Departments of these states have trained experts on their staffs to study the problem involved and make both the regulations and their enforcement scientific and reasonable. In Connecticut the legal control of factory sanitation is in general entrusted to the Factory Inspection Department (H. E. Mackenzie, Commissioner), with a staff of 16 inspectors. In the year 1925-1926 this force made 6012 inspections in factories, 3749 in mercantile establishments, 1660 mercantile elevator inspections and 673 bakeshop inspections and issued a total of 2029 orders. Of these orders, 547 dealt with mercantile elevators while other prominent types of orders concerned posting of labor notices, cleanliness of toilets, providing or replenishing emergency kits, cleaning and whitewashing bakeshops and the like. Machinery guarding, however, was the subject of 233 orders and ventilation and dust removal of 29. The Factory Inspection Department has no medical or sanitary or engineering experts on its staff and though its employees may be able to deal intelligently with the simple problems of machinery guarding they are quite incapable of providing against poison hazards or determining what constitutes "an excessive amount of dust" (which demands the use of analytical procedures) or of discovering whether a factory is, or is not "well lighted and ventilated."

Section 2416 of the Revised Laws requires physicians to report to the State Department of Health all cases of "poisoning from lead, phosphorus, arsenic, brass, wood alcohol or mercury or their compounds or from anthrax, or from compressed-air illness or any other disease, contracted as a result of the nature of the employment of such person." Prior to 1923, these reports were made to the Department of Factory Inspection and since the transfer to the Department of Health reporting has been somewhat improved. It is still, however, very incomplete. For the year 1925-26, the following reports were made under this provision.

REPORTS OF OCCUPATIONAL DISEASES,
JULY 1, 1925 — July 1, 1926.

	Connecticut
Anemia	1
Anthrax	2
Coal Gas Inhalation	1
Congestion of Kidneys	1
Copper and Zinc Poisoning	1
Dermatitis and Eczema	35
Laryngitis	1
Lead Poisoning	30
Mercury Poisoning	9
Total	81

A most important step was taken by the 1927 Legislature in authorizing the State Department of Health to investigate and make recommendations for the control of occupational diseases, for which purpose the sum of $17,500 was appropriated for the biennium, 1927-29. In accordance with this law Dr. A. S. Gray was appointed Director of a new Division of Occupational Diseases in the State Department of Health, beginning service January 1. This is

a sound and progressive step which should be fraught with far-reaching benefits to the health and the economic efficiency of the state.

3. **Activities of Individual Employers in the Field of Industrial Hygiene.** In general, the far-sighted employer has, in America, accomplished far more than the state for the furtherance of industrial hygiene. We may now turn to an analysis of what has been done along this line in New Haven.

All employers coming under the Compensation Act must of course provide medical and surgical care for injuries or diseases directly resulting from conditions of employment. What we are here interested in, is the extent to which employers have gone further and have made constructive provisions for medical and nursing service and safety organization as a preventive of disease and injury and for the positive promotion of efficiency.

The State Factory Inspection Department Report for 1926 lists 545 manufacturing establishments within the limits of the city of New Haven, of which 10 had over 500 employees, 37 between 100 and 500 employees and 41, between 50 and 100 employees, the remaining 457 being smaller. To find out what the larger employers were doing for the health of their operatives we sent out a questionnaire to all firms having 50 or more employees and followed up the replies of those who reported the employment of physicians or nurses by personal inspections. The general results of this study are presented in the two tables below.

INDUSTRIAL ORGANIZATIONS REGULARLY EMPLOYING PHYSICIANS AND NURSES FOR HEALTH PROMOTION AMONG THEIR EMPLOYEES.

Firm	*Approximate Number of Employees*	*Hours Medical Service Daily*	*Graduate Nurses*	*Nursing Attendants*
A	13,000	5	3	1
B	3,000	1-2	2	.
C	2,600	1	1	1
D	1,400	1-2	1	.
E	1,000	1	1	.
F	1,000	1	.	1
G	600	2	1	.
H	400	½	1	.
I	350	½	.	1
J	300	½	1	.

INDUSTRIAL ORGANIZATIONS EMPLOYING NURSES ONLY FOR HEALTH PROMOTION AMONG THEIR EMPLOYEES.

Firm	*Approximate Number of Employees*	*Graduate Nurses*	*Nursing Attendants*
K	2,000	.	1
L	1,800	.	3
M	800	.	1
N	600	.	1
O	500-600	1	.
P	400-550	.	1
Q	400	1	.
R	250-350	.	1
S	300	.	1
T	300	.	1
U	250-270	.	2
V	230	.	1

Thus it appears that, of 11 firms employing over 500 operatives, all provide some sort of nursing service but only 7 have regular medical service. Of approximately 50 factories and stores with 100 or more employees there are, however, only 10 which employ physicians (except after a compensable accident has occurred) only 10 which employ

graduate nurses and only 14 which employ nursing attendants of a lower grade. It is generally recognized by industrial hygienists that regular medical service should be provided for every plant employing 500 persons and that a plant employing 2,000 needs a full time medical director. It is therefore obvious that the service provided in New Haven is in few instances adequate for the best results.

"Plant hospitals", so-called, really rooms for medical examination and treatment, are found in most of the plants but they vary widely in equipment and suitability. In one plant the only provision for the nurse (there is no physician) is "a corner of the general superintendent's office and one half of his desk." The New York, New Haven and Hartford Railroad, the Winchester Repeating Arms Company and the American Steel and Wire Company on the other hand have admirably equipped hospitals. The Railroad has a physician's private office, a nurses' office, a treatment room with good equipment, an examination room with eye chair, operating table, treatment chair, fluoroscope and laboratory equipment, a physiotherapy department with ultra-violet and infra red lights and diathermy apparatus, a ward with 2 beds, bath, shower and toilet and storage and locker rooms. The Steel and Wire Company has an admirable equipment for a smaller plant, the entire first floor of a small building being set aside for this purpose, with an office, examining room, toilets and club room. There is an H-H inhalator, an electric baking apparatus, a couch, an autoclave and a good stock of drugs and supplies. First aid kits and stretcher are provided in every department throughout the factory. The Malley Company has a particularly good lay-out for a department store service, with a small dispensary, a waiting room, a rest room, provided with 2 beds and an examining and consulting room. The

firm supports a room at St. Raphael's Hospital and practically all employees can arrange for free hospital care.

The type of work performed varies as widely as the equipment provided. In one plant it appeared that the entire provision made for the health of the operatives consisted in the employment of a nursing attendant with no training whatever who "dressed in a black jersey and dirty apron" and whose duty "in the main seemed to be to give the girls a hot water bottle and let them lie down." At the other extreme, stands the Railroad Company with a physician on duty for five hours a day, two trained female nurses, one trained male nurse and one male hospital assistant. Four thousand cases have been handled by this department during 1927 with over 25,000 treatments. Berger Brothers have a specially admirable program for a plant of only 300 employees. The Superintendent says,

"Daily a physician visits the Plant, generally between eleven and twelve o'clock. He will see the persons whose names have been listed for interview, treatment or advice. He will treat or prescribe for minor ills and advise employee to see personal physician in more serious cases. He will average about half an hour per day at the Plant.

"The Plant nurse is a full time worker who cares for the general health and welfare of employees. She administers simple remedies and treatments from a well equipped dispensary. Of course such services are not charged to employees.

"The nurse will arrange for dental or eye examinations. If work is recommended, the Company will guarantee all charges and deduct a small amount each week at the employee's convenience. Many times the nurse arranges for hospital care and operations.

"We have been very fortunate in having a mature woman of high character, forceful and yet kindly enough

to act as nurse, counselor and friend to the varied assortment of people found in an industry employing many girls and women in office and factory."

Routine physical examinations of new employees are made by the American Steel and Wire Company, L. Candee and Company, the Edward Malley Company, the Safety Car Heating and Lighting Company, and the Southern New England Telephone Company.

Particularly well organized programs for industrial safety, including the display of National Safety Council posters, safety talks and organization of shop safety committees, were noted at the Acme Wire Company, the American Steel and Wire Company, Berger Brothers, L. Candee and Company, the National Folding Box Company, the New York, New Haven and Hartford Railroad Company, Peck Brothers, the Seamless Rubber Company, the Southern New England Telephone Company, the Whitney Blake Company and the Winchester Repeating Arms Company. The Kolynos Company, among the smaller firms, is notable for a good safety and health program, directed by its bacteriologist, with the result that the number of accidents requiring medical attention has decreased from 23 in 1920-21 to 8 in 1925-26, the average number of days lost per accident from 6 to 2 and the number of accidents upon which compensation was paid from 6 to 0.

The safety movement has been markedly stimulated by the work of the Safety Council of the Chamber of Commerce under Mr. Marshman who arranges for the distribution of posters and the holding of meetings and conferences. The strong Foreman's Club is a powerful force in the same direction. Approximately a year ago, under the able direction of Mr. E. R. DeJon of the Southern New England Telephone Company, and with the aid of the American Red

Cross, the Safety Council instituted a course in first aid instruction. Nearly forty certificates were issued to industrial workers who took the required number of study hours and passed the written examination,—most of them representing small plants with no medical or nursing service. Some twenty workers are taking a similar course at the present time.

4. **Summary and Recommendations.** In general it may be said that, from the state standpoint, Connecticut has a good compensation act and in the New Division of Industrial Hygiene of the State Department of Health an excellent foundation for the expert guidance so much needed in this important field.

Locally, it is evident that some of the larger plants and department stores are beginning to provide real health service for their employees. In most instances, however, the provision made is still somewhat embryonic. When seven plants, employing over 1,000 persons each and having between them 24,000 employees, provide an aggregate total of 11 hours a day of regular medical service it is evident that the possibilities of industrial medicine have not been realized. Furthermore it will be noted that there are apparently but 31 nurses and nursing attendants in all the factories and stores of New Haven and, of these 31, only 13 are trained nurses.

It has been amply proved that industrial medical and nursing service is a paying investment. By industrial medical service, however, is meant not merely the practice of minor surgery for an hour a day within the walls of a plant but the service of a physician of industrial experience who studies the workers and their tasks and applies all the resources of medical and sanitary science to the promotion of health and efficiency under the conditions of a particular

industry. Except in the Railroad there is not a single industrial physician of this type in New Haven. By industrial nursing is meant, not the presence of an untrained attendant but of a graduate nurse who has similarly specialized in the field of industry. The care of minor injuries is only the first step in industrial hygiene. It should be supplemented by treatment of minor illnesses, by routine medical examinations, by health education and by the continuing study of hazardous processes and the application of means for rendering them safe. Such a service as this pays for itself tenfold, not only in diminished compensation cost, but in decreased overturn and in increased efficiency and contentment.

Even among the larger firms it seems evident that some definite leadership is necessary in order to promote a wider appreciation of the values of industrial hygiene. The smaller firms cannot possibly secure service of the right sort without assistance, since the only way in which industrial medicine can be brought to the small plant is through cooperation. The Safety Council of the Chamber of Commerce seems the logical body to lead in this field, since the National Safety Council which it represents was organized to promote health as well as safety in the narrower sense. It could perform an extraordinarily useful service by working out programs of cooperative industrial medicine suitable to both the large and the small industries of New Haven and by bringing to the attention of the industries the possibilities of such service.

Finally, in every great industrial center like New Haven there should be a well-equipped central Industrial Clinic with a staff, able not only to diagnose industrial diseases such as industrial poisoning and industrial silicosis, but to work out practical methods for their control. Such

a clinic would also be in position to offer the expert guidance needed in the development of sound programs for industrial health services within the walls of the individual factories. It could be developed with special facility in connection with the Yale Medical School, whose Department of Public Health has for years been active in this field and which enjoys the advantage of the presence on its staff of Dr. Leonard Greenburg of the U. S. Public Health Service, one of the leading experts on industrial dust and poison hazards in the United States.

We would urge as

Recommendation 86. That the Chamber of Commerce appoint a special committee on Industrial Hygiene to investigate the possibility of local developments in this field with a view to (a) the organization as a branch of its Safety Council work of a systematic program for the promotion of health services in the factories and stores of New Haven and (b) the establishment in cooperation with the Yale Medical School of a central industrial hygiene clinic for the study and control of industrial hazards and the promotion of industrial health and efficiency.

Chapter XXIII.

THE PROBLEM OF STREET SAFETY.

1. **Importance of the Problem.** While the progress of civilization has automatically reduced the hazards due to primitive insanitary environments and the handicaps associated with poverty, it has also introduced its own new and peculiar dangers. Among these, the accident hazard due to the automobile occupies a prominent and a sinister place.

The general group of causes of death classified under the term "Violence" or "External Causes" has not substantially changed in extent in New Haven during the past fifty years. It rose from 62 per 100,000 in 1880 to 80 per 100,000 in 1910, and fell to 74 in 1920.

The particular items in this group have, however, altered greatly. Within the general class of deaths due to violence, "Motor Vehicle Injuries" first appears, specifically listed in the Health Department reports in 1917, with 21 deaths. Steadily the deaths due to this particular cause have mounted with the increasing use of automobiles until for the past three years we find the following situation.

Year.	*Deaths from Violence.*	*Deaths from Motor Vehicle Injuries.*
1924	149	45
1925	140	40
1926	132	44

Nearly one-third of all violent deaths, amounting to an average of over 40 a year, have thus been due to motor vehicle accidents, placing the automobile among the ten

principal causes of death, ranking with diabetes and diarrheal diseases, causing one-third as many deaths as tuberculosis. Particularly tragic is the fact that during these three years, 32 per cent of the persons killed by the automobile were under 20 years of age.

The situation is of course not peculiar to New Haven. The U. S. Department of Commerce reports that 18,871 deaths occurred in the United States in 1926 as a result of automobile accidents. The death rate from this cause was 17.9 per 100,000 for the country as a whole (having risen steadily with increasing motor traffic from 12.5 in 1922). For a group of 67 cities, the 1926 rate was 21.7 and for New Haven 23.1, just about the average.

It should be noted that the figures so far quoted include all deaths occurring in New Haven irrespective of the place where the accident took place. Of the 44 deaths in 1926, only 23 were due to accidents within the city limits. The rest represent cases injured in adjoining towns and brought in to hospitals or homes to die.

2. **Causes of Automobile Accidents.** The Department of Motor Vehicles of the State of Connecticut under Mr. R. B. Stoeckel, Commissioner of Motor Vehicles, has performed a remarkable, and in some respects unique, service in the study of this problem. The work of this department should be a source of great pride to the state.

The careful analysis of all motor vehicle accidents in the state by Mr. Stoeckel's office makes possible the following illuminating tabulation of the causes of such accidents in 1926. The law requires the reporting of all accidents resulting in personal injury or property damage amounting to more than $10.

CAUSES OF MOTOR VEHICLE ACCIDENTS. 1926.

Cause.	*Number of Accidents.*	
	Connecticut.	*New Haven.*
Recklessness of Operator:		
Inattention	6,240	635
Failure to grant right of way	3,644	609
Skidding	2,339	253
Driving on wrong side of road	1,009	34
Careless backing	906	105
Operating too fast for conditions	745	93
Following too closely	520	41
Failure to signal	452	42
Inexperience	429	37
All others in this class	890	77
Carelessness of Child Pedestrian:		
Crossing street inattentively	868	118
Stepping from behind before looking	451	60
All others in this class	250	22
Carelessness of Adult Pedestrian:		
Crossing street inattentively	733	102
All others in this class	417	55
Carelessness of Contributor:		
Motorman	694	138
Unknown operator	582	47
Animal	360	40
Bicyclist	251	44
All others in this class	196	36
Carelessness of Passenger	86	10
Defective Equipment	794	50
Miscellaneous	257	15

In New Haven, as in the state at large, the commonest cause of accidents is inattention on the part of the driver, followed by failure on the part of the driver to grant the right of way and, next in order of importance, by skidding. Careless backing and fast driving are important in both cases. Inattentive crossing of the street by pedestrians, both children and adults, come next as causes of accidents. Carelessness of motormen ranks fourth as a cause of accidents in the city, and only ninth in the state as a whole.

All in all, 74 per cent of all accidents were due to carelessness of drivers, 12 per cent to carelessness of pedestrians, and 14 per cent to all other causes.

3. **New Haven's Control Program.** In addition to the admirable work of the State Department of Motor Vehicles, New Haven has for several years enjoyed the advantages of a vigorous and effective program for the furtherance of street safety. This work has been conducted by the Safety Council of the New Haven Chamber of Commerce which is the recognized local division of the National Safety Council under the able direction of Mr. N. N. Marshman. Besides contributing Mr. Marshman's services, with office space and telephone and clerical service, the Chamber appropriates $2,500 a year for the furtherance of the safety movement. The Health Officer is a member of the committee in charge of this work and Mr. Schnelle of the Department of Education is in charge of the work in the schools.

The work of the Council is at present concentrated, in the main, along three major lines, as follows:

A. The education of the general public in the motives and methods underlying street safety, by material furnished to the daily press, by circulars delivered at the homes and by the display on streets and trolley cars of admirable poster material some of it prepared by the National Safety Council, and some prepared here to meet special local conditions.

B. The development of safety habits among the drivers of commercial vehicles of various types by meetings for commercial vehicle operators, by issuing membership safety emblems to be placed by the driver's seat, and by means of a continuing safety competition in which 450 drivers employed by 30 firms are now enrolled. These drivers receive monthly safety news letters at their homes. Full records are kept of accidents in relation to service and the results which are excellent as compared with those

recorded for other cities are distributed monthly to participating firms.

C. A comprehensive program of safety education for school children. Some 33 Junior Safety Councils under the direction of Mr. Schnelle are now in operation in the schools, whose purpose is to help the pupils of their respective schools "in the prevention of accidents and dangerous practices by making attractive the idea of thoughtfulness for others and proper care of their own actions." Posters and magazines containing special lessons based on them (prepared by the National Safety Council) are distributed monthly to 660 school rooms. Harnesses and badges are provided for Junior Patrols who act as traffic officers for their fellow school children in the neighborhood of the school buildings. Rallies and cinema shows are held at intervals and contact with the home is systematically developed through material dealing particularly with home safety.

4. **Summary and Recommendations.** The problem of street safety is evidently a vital and important part of the community health program, since motor vehicle accidents now constitute one of the ten major causes of death. The mortality from this cause has been increasing year by year with the growing use of the automobile, but has apparently about reached its peak and may soon be expected to show a real reduction under the influence of a concerted program.

The Safety Movement, whether in the factory or in the street, involves two distinct problems—one, engineering and the other, educational. In the first place, it is essential that the construction of streets and the regulation of traffic should be made as nearly fool-proof as possible. The installation of automatic traffic signals is an important step

in this direction, but there is serious question whether the details of the system installed in New Haven have been worked out as carefully as would be desirable. At the instance of the Chamber of Commerce, there has now been created a New Haven Traffic Commission including the Chief of Police, the City Engineer, a member of the Board of Aldermen and four private citizens, which will exercise broad powers in this field. We believe that it would be most desirable for this Commission to conduct an organized traffic survey in order to obtain a sound scientific basis for the operation of the light signals, for parking rules and general traffic regulations.

The main factor in the Safety Movement is, however, a psychological rather than an engineering one; and the remedy is education. The educational program carried out in the schools by the Safety Council is worthy of high praise. It should substantially reduce accidents due to inattentiveness of the children themselves and should lay the basis for a generation of more careful drivers in the future. If, however, we are at the present time to cease killing 40 or 50 people a year in New Haven and its suburbs it is the adult drivers who must be reached since, as we have seen, three-fourths of all accidents are due to the driver of the car. Commissioner Stoeckel has pointed out with force and justice (see Bulletins 46 and 48 of the State Department of Motor Vehicles) that "every motor vehicle accident has as its basic cause a faulty mind action on the part of one or more persons." Breakdown of a nervous coordination sufficiently prompt and accurate to meet a given situation is the primary factor involved; and introspection and self-training on the part of driver and pedestrian will offer the only solution.

The general driving public is being reached with some effect by the Safety Council posters, and intensive education is provided for those who most need it by the courts. In 1926 for the State as a whole, there were 24,326 accidents reported (one to every 11 registrations). There were 17,075 convictions and 8,821 suspensions. A third type of education, designed to reach an intermediate group, is provided by an informal voluntary committee of citizens who report to the Safety Council violations of safe practice in automobile driving (not resulting in accidents) which they may happen to observe so that the Council may through correspondence call courteous attention to the need for greater caution.

An important step toward greater responsibility was taken by the 1925 legislature in the passage of an act which provides that any person convicted of reckless driving or any person who has caused death or physical injury or damage to property amounting to over $100 may be required before renewal of license to provide evidence of competency to meet damages incurred by carelessness in the future.

The Safety Campaign which has been conducted throughout the state seems to be at last bearing fruit. Whlie the total number of accidents continues to increase, the ratio of accidents to cars licensed began to decrease in 1925 and the number of fatal accidents decreased for the first time in 1926.

In general, then, the work that is being done is sound and fruitful. What is needed for the future is a more exact knowledge of the relative importance of special factors involved. Would it be helpful to insist on psychological tests and tests of hearing and vision before granting a license to any operator? Would it be desirable to issue special tem-

porary or tentative licenses to drivers who have been the cause of accidents? Would it be well to introduce the New York City plan of inscribing all sorts of minor violations of traffic regulations on the license card so as to produce cumulative evidence of incapacity? We need light on all such points, and it is fortunate that through the generosity of the Hartley Corporation a study on the causes of motor vehicle accidents has been in progress for the last three years in cooperation with the State Department of Motor Vehicles. Professor R. S. Kirby of Yale, who is in immediate charge of this investigation, plans, during the coming year, to devote special attention to the subject of the characteristics of the individual driver in relation to street accidents, beginning with those who have repeatedly fallen into the net of the law. This is a work of the greatest importance.

In substance, future progess in this field demands more detailed information in regard to both the engineering and the psychological factors in street accidents. The former must be studied locally by the Traffic Commission. The latter are, of course, universal and can be dealt with by the State machinery referred to above. We would therefore urge as

Recommendation 87. That a comprehensive Traffic Survey should be made by the New Haven Traffic Commission to the end that traffic lights, traffic and parking regulations, and all other external conditions affecting street safety shall be worked out in a sound and scientific fashion.

Chapter XXIV.

CANCER.

With the cooperation of Samuel C. Harvey, Professor of Surgery, Yale School of Medicine.

1. **Significance of Problem.** The health problems so far considered (with the exception of pneumonia) are all in a fair way of solution. Our problem is merely to accelerate and complete the successful campaigns waged during the past twenty years. With cancer we begin to consider a far less encouraging picture. This disease, as will be indicated in detail in a later chapter on Vital Statistics, has, on the face of the returns shown a tendency to increase rather than to decrease in importance as a cause of death. Fifty years ago (in 1877) the recorded death-rate from this cause was 57 per 100,000; in 1887 and 1897 it was about the same (rates, 63 and 62 respectively). In 1907 it rose to 86; in 1917 to 108. During the past five years the rate has varied between 105 and 131 and has averaged 117. Thus we get the picture of a rate stationary at a low level from 1877 to about 1900 but mounting rapidly from 1900 to 1915 and then maintaining a new fairly stationary level.

These crude death rates are somewhat fallacious for three different reasons. In the first place the proportion of deaths of non-residents occurring in New Haven has greatly increased with the development of our hospitals. Of the cancer deaths in the three years 1924-1926, 19 per cent were deaths of non-residents.

In the second place improvements in diagnosis account for a large part of the increase in reported cancer. In the three years 1877-79 ill-defined and unspecified causes of

death accounted for an average death rate of 46 per 100,000 while for 1925-1927 this figure had fallen to 2 per 100,000. A part of these deaths, once ill-defined, are now recorded as due to cancer.

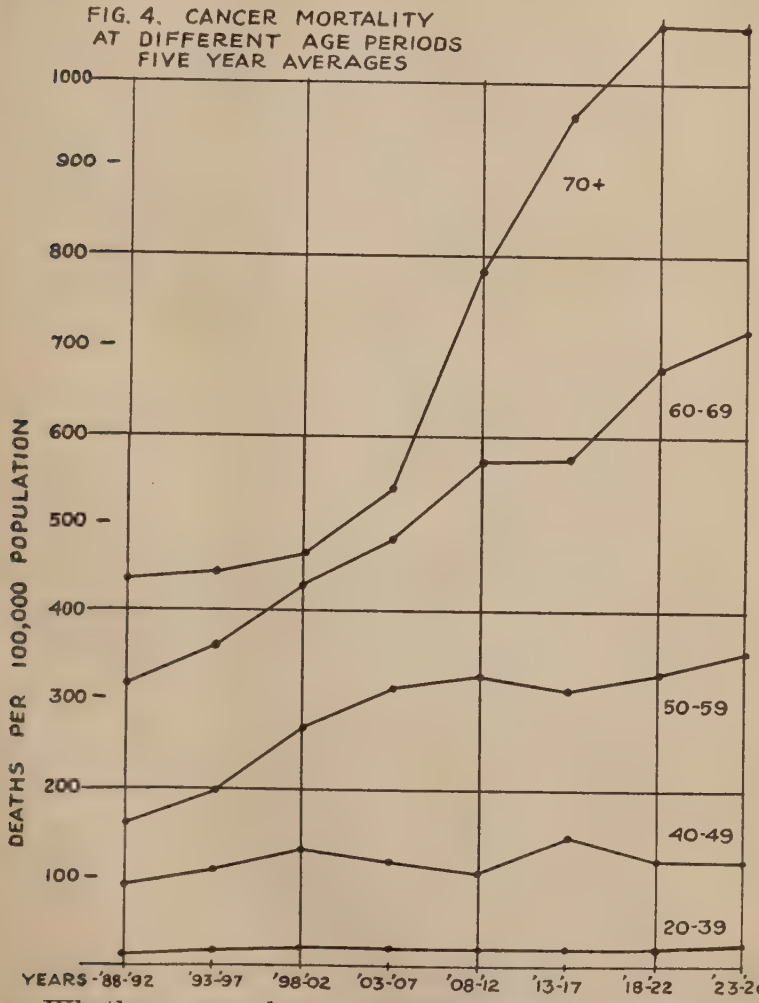
Finally, a part of the actual increase in cancer mortality is due to the fact that with progress in the elimination of such diseases as typhoid fever, diphtheria and tuberculosis (diseases of youth) a larger proportion of the population lives on into the later age periods when cancer is likely to occur. Mr. H. H. Walker and Miss M. E. Farris in a study now under way in the Department of Public Health of the Medical School have analyzed the data for the past forty years by age and the results are tabulated below.

MORTALITY FROM CANCER BY AGE PERIODS.
DEATHS PER 100,000.

Age Period	*Under 20*	*20-39*	*40-49*	*50-59*	*60-69*	*70+*
1888-1892	3	13	89	160	320	437
1893-1897	1	17	104	195	362	448
1898-1902	2	22	130	271	434	456
1903-1907	1	20	119	314	483	538
1908-1912	4	21	104	328	572	786
1913-1917	3	21	147	311	573	954
1918-1922	4	22	122	333	678	1070
1923-1926	3	25	122	354	722	1069

Apparently change in age distribution has had little to do with the increase in cancer mortality in New Haven. During the last 40 years the death rate from this cause has doubled and the rate has increased in about the same proportion at each age period,—beyond fifty years of age. The fact that the decade 40-49 shows a decrease since 1913-1917 and that between the ages of 20 and 49 there has been no increase since 1898-1902, may possibly be significant of some progress in the direction of postponing the average age at death from this disease by surgical treat-

ment; but the picture as a whole is by no means an encouraging one.



Whether cancer has actually increased or merely been discovered, the fact remains that 200 people die every year

of this disease in New Haven. For the past 40 years, cancer has consistently stood third or fourth as a cause of death, exceeded by heart disease and pneumonia and running neck and neck with apoplexy.

Along with pneumonia and the circulatory diseases, cancer confronts us as one of the three major health problems of the future. Furthermore the recorded rate for New Haven is much higher than that for the Registration Area as a whole (for the five years 1920-24, New Haven's cancer death rate averaged 117 and that for the Registration Area, 87). This high apparent rate is, however, in some considerable measure due to non-resident deaths in hospital which make up nearly 20 per cent of all cancer deaths in New Haven.

2. **The Control of Cancer.** It has been said that cancer is as controllable as tuberculosis; but this is an overstatement. Cancer of the esophagus, for example, and many forms of internal cancer can almost never be diagnosed sufficiently early to make operation successful. On the other hand, cancer of the skin and of the lip need never be fatal if diagnosed and treated promptly. The major factors in the cancer death rate,—cancer of the stomach and liver, of the peritoneum, intestines and rectum, of the female generative organs and of the female breast occupy an intermediate position,—with promise of successful surgical treatment in a substantial proportion of cases. It is estimated that from one third to one half of all true cancers are preceded by precancerous conditions or chronic irritations whose removal would have presumably prevented the development of the cancer. It is probably safe to estimate that one half of the deaths now due to cancer could be avoided by skillful diagnosis and prompt surgical treatment of cancerous or precancerous conditions.

The following analysis of 347 cases of cancer observed in the New Haven Hospital from 1921 to 1928 gives a picture of the possibilities. It would appear from this table that with reasonably early diagnosis 12 per cent of cases of cancer offer an excellent prospect of cure and 50 per cent a good prospect of cure while in 38 per cent there is relatively little hope of success.

DISTRIBUTION OF 338 CASES OF CANCER ACCORDING TO SITE. (9 OTHERS WERE CLASSED AS MISCELLANEOUS).

Probability of cure with reasonably early diagnosis	*Excellent*		*Good*		*Poor*	
	Site	*No. Cases*	*Site*	*No. Cases*	*Site*	*No. Cases*
	Skin	20	Mouth	14	Esophagus	13
	Lip	21	Stomach	46	Antrum	3
			Intestine	24	Lung	6
			Rectum	12	Prostate	6
			Larynx	4	Testicle	2
			Bladder	18	Lymph nodes	6
			Breast	52	Pancreas	9
					Thyroid	2
					Uterus	80
Total		41		170		127

Of a total of 282 cases of cancer actually treated in the New Haven Hospital between 1921 and 1928 (88 per cent of them by operation) 53 per cent are known to be dead, and 35 per cent are still living, while 12 per cent of the cases have been lost sight of.

3. **An Ideal Community Program for the Control of Cancer.** If we seriously wish to control cancer, as we are controlling tuberculosis, we must set up essentially the following type of community machinery.

A. Provision in the Health Department for a serious continuing study of local statistics as to cancer morbidity and mortality, to establish the facts in the existing situation and the points of most profitable attack. This should include annual tabulations of deaths from cancer, by age and sex, and classified by the organ affected in accordance

with the International Classification, preparation of chronological charts comparing the incidence of cancer in New Haven with that in other areas and intensive study of hospital and clinic cases with reference to duration of disease before diagnosis and operation and results of treatment.

B. Facilitation of diagnosis by provision of free laboratory service, by the establishment of a special diagnostic cancer clinic and by the development of free consultation service in cancer diagnosis to the private practitioner.

C. Adequate facilities for surgical treatment in hospital.

D. Home nursing service to bring suspicious cases to the clinic or private physician for diagnosis, to follow up diagnosed cases and secure operation and to follow up post-hospital cases.

E. An organized and intensive campaign of popular education, directed toward both the medical profession and the general public, in the interest of early diagnosis and prompt treatment of cancerous and pre-cancerous conditions.

4. **The Present Situation in New Haven.** New Haven possesses admirable facilities for the hospital treatment of cancer, its hospitals enjoying the service of an unusual proportion of surgeons specially skilled in dealing with this disease. During the year 1926, 129 cases of cancer were admitted at St. Raphael's Hospital, 71 at Grace Hospital and 92 at New Haven Hospital.* The total of nearly 300 cases a year treated in the New Haven hospitals is a high one and testifies to the excellent quality of the surgical services of the city.

* This last figure is for 1927 not 1926.

The Visiting Nurse Association admitted 43 cancer cases in 1926 and discharged 40, a figure which could profitably be much enlarged if a definite community program were organized.

Aside from these two factors, New Haven has almost nothing in the way of a cancer control program. There is no one in the Health Department to make an intensive statistical study of the problem. Deaths are tabulated by age and sex but not by organ affected. (It is a curious fact that this tabulation was actually made in the Health Department reports up to 1897—and then abandoned!)

The Department of Pathology of the New Haven Hospital does furnish free pathological diagnostic service, but there is no special Cancer Clinic and no consulting service available. Nursing service under these circumstances is necessarily mainly confined to actual bedside care rather than to the securing of early diagnosis. There is no systematic educational campaign whatever. During the past two years not a single article has appeared in the Bulletin of the Department of Health in regard to cancer.

5. **Conclusions and Recommendations.** Cancer is the fourth cause of death in New Haven, contributing some 200 deaths a year to the total mortality. It is a disease which could in very large measure be controlled by prompt surgical treatment of cancerous and pre-cancerous conditions. New Haven has unusual surgical skill available for the treatment of this disease but this skill is now generally applied too late to be of the most substantial value, for the lack of effective community machinery for promoting early diagnosis.

There are two steps which seem obviously necessary in order to develop a cancer program for New Haven.

The first is the setting up of machinery in the city health department for continuing statistical study of the local cancer problem and for the development of an intensive campaign of popular education in regard to the importance of early treatment. Such a step need not involve great expense. It would not be necessary in this case to employ a surgical specialist since expert knowledge of this kind is amply available at the dispensary and hospitals. The educational work could be carried on by the Director of Health Education whose appointment is suggested in a succeeding chapter. The statistical work could be performed without any additional expense by a properly organized Bureau of Vital Statistics under the Health Department, such as has been already recommended. Pending such an arrangement, a special statistical assistant should be employed to perform this work and the allied work on the statistics of acute communicable diseases, tuberculosis and heart disease which is now undone or done at unnecessary cost, by medical men whose time is too valuable for such a purpose.

The second essential now lacking in New Haven is a specially organized Cancer Clinic. The fact that cancer cases can be seen at the general surgical clinics does not at all meet the situation, since effective propaganda by the Health Department must necessarily focus on the provision of a special expert service designed to facilitate the early diagnosis of this particular disease. With 200 deaths a year, we may presume that there are at a given time 400 cases of cancer in the city and some 300 of these should ideally be in contact with such a clinic. The Surgical Department of the Dispensary should be able to provide the medical service necessary for a cancer clinic if clerical assistance were available for the record-keeping and cor-

respondence necessary. Actual home follow up should be provided through the Visiting Nurse Association, ultimately of course necessitating an increase of staff in that organization.

Our four recommendations in regard to the development of a cancer control program in New Haven would therefore be as follows:

Recommendation 88. That, unless a transfer of the whole work of vital statistics registration to the Health Department can be effected, the Board of Health provide for a special statistical assistant to make a continuing study of the statistical aspects of the cancer problem in New Haven (and of allied topics to be discussed in the following chapter).

Recommendation 89. That the Board of Health through the medium of a special Bureau of Health Education (to be later discussed) organize, with the cooperation of local physicians and surgeons, an intensive campaign of education among the members of the medical profession and the public in regard to the importance of the early diagnosis and prompt surgical treatment of cancer.

Recommendation 90. That a special Cancer Clinic for the early diagnosis of this disease be opened at the New Haven Dispensary and that free consultation service in respect to this problem be offered to the private physicians of the city; and that provision be made in the Dispensary budget for clerical assistance to keep the records and carry on the correspondence of the Cancer Clinic.

Recommendation 91. That, if, and when, the last two steps are taken, the Visiting Nurse Association staff should be increased to provide for more intensive follow-up of suspected cancer cases, of cases diagnosed but not yet operated upon and of post-hospital cases.

Chapter XXV.

DISEASES OF THE HEART, ARTERIES AND KIDNEYS.

With the cooperation of H. M. Marvin, Assistant Professor of Medicine, Yale School of Medicine.

1. **Magnitude of the Problem.** Up to the beginning of the present century, the leading cause of death in New Haven was tuberculosis, with pneumonia a close second, (exceeding tuberculosis only in 1891, 1893 and 1896). From 1900 to 1919 pneumonia led (exceeded only by tuberculosis in 1901 and 1902 and by organic heart disease in 1913). Since 1920 organic heart disease has been the leading cause of death except for 1922 when pneumonia stood first.

This is only part of the story, however. Organic heart disease is one of a closely related group of maladies in which the heart, arteries and kidneys are more or less affected by degenerative changes. The chief of such allied conditions are apoplexy and nephritis and these two headings during the last five years have consistently appeared among the six leading causes of death (along with cancer, pneumonia and diseases of early infancy). Heart disease during this period has been first (except in 1922 when it was second); apoplexy has been third or fourth, nephritis, fifth or sixth.

These three conditions taken together account for an average of 672 deaths a year in New Haven, with a rate of 382 per 100,000 or one-third of the total annual death rate from all causes (these figures based on 1922-6 average).

Fifty years ago, (average for 1876-8) the combined rate for these three diseases was only 173 per 100,000 or one-

fourteenth of the mortality from all causes. Twenty years ago (in 1906-8) it had risen to 415 or one-fourth of the mortality from all causes! An analysis of the death rates from organic heart disease by age periods, made by Mr. H. H. Walker and Miss M. E. Farris, brings out the facts indicated in the table below.

MORTALITY FROM ORGANIC HEART DISEASE BY AGE PERIODS.

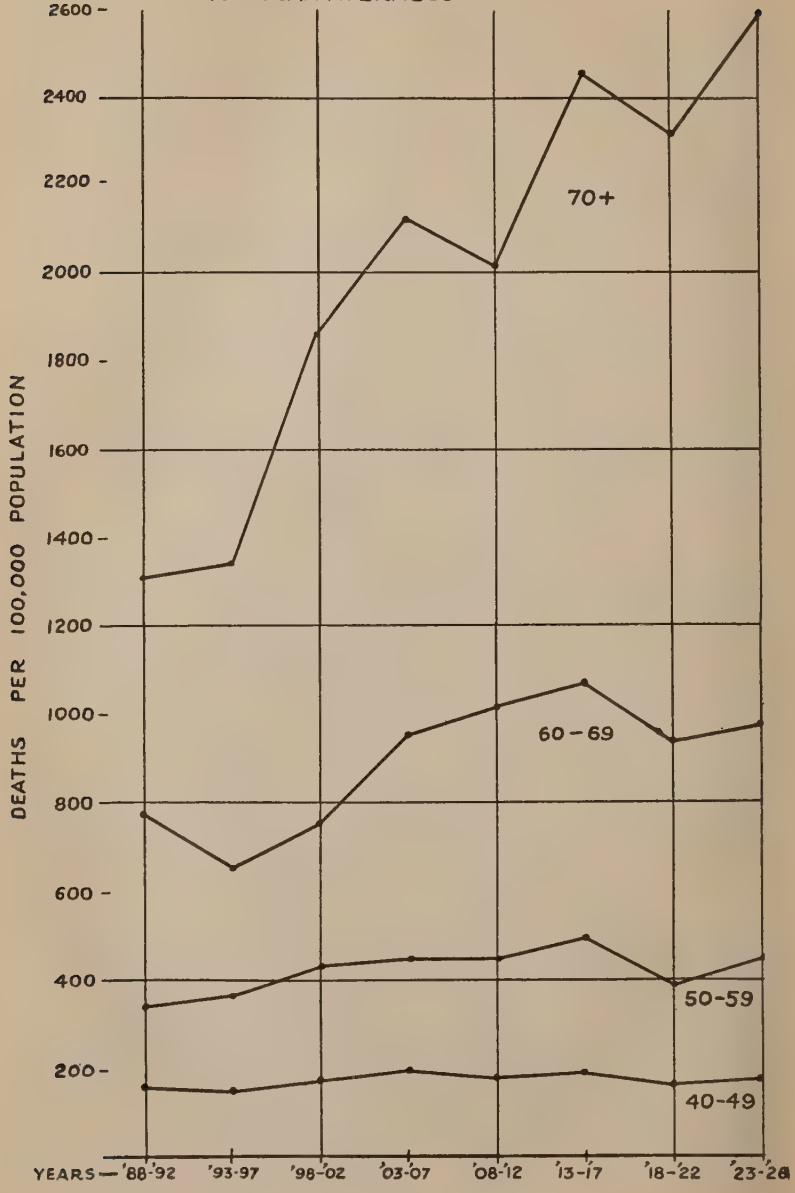
DEATHS PER 100,000.

Age Period	*Under 20*	*20-39*	*40-49*	*50-59*	*60-69*	*70+*
1888-1892	30	49	156	336	784	1309
1893-1897	37	48	151	362	652	1345
1898-1902	30	59	179	429	764	1860
1903-1907	29	66	195	444	947	2118
1908-1912	32	73	178	444	1009	2019
1913-1917	39	63	186	488	1069	2456
1918-1922	32	56	157	385	940	2315
1923-1926	49	47	167	442	971	2592

It will be noted that under the age of 20 the last four years show an increased death rate which may possibly be due to fuller recognition of cardiac conditions at early ages as a result of the emphasis placed on this matter in the children's cardiac clinic. In any case the need for increased attention to the problem of cardiac disease among school children is clearly indicated.

From the age of 20 to the age of 39 on the other hand the last 14 year period shows a decrease in mortality and from the age of 40 to the age of 69 the last nine year period shows a decrease. Only at ages of 70 and over is the rate from organic heart disease still on the increase. (The drop in all rates during the period 1918-1922 is due to the influenza epidemic which killed off many individuals with weak hearts who would otherwise have died in 1918 and in succeeding years from this cause but whose deaths in 1918 were credited to influenza).

FIG. 5. MORTALITY FROM ORGANIC HEART DISEASE AT DIFFERENT AGE PERIODS FIVE YEAR AVERAGES



It will be noted from the detailed figures to be cited in Chapter XXIX that while the rate from both organic heart disease and nephritis tended to rise pretty steadily up to 1915-1917, since that date, the rate from heart disease has remained almost stationary, while the rate from nephritis has shown a marked decrease. This is due to improved methods of medical diagnosis, many deaths in which the whole arterio-renal complex was involved, and which were once put down to Bright's disease (or nephritis) being now more correctly classed as due primarily to diseases of the heart and arteries. The best picture of the whole situation can be obtained by considering the sum total of deaths from organic heart disease, cerebral hemorrhage and apoplexy and Bright's disease and nephritis taken together. In the table below and in the accompanying diagram a smoothed curve has been prepared for this whole group of diseases by adding together the deaths from each of the three causes for each year and then averaging the total for each year with the total for the preceding and succeeding year.

DEATH RATE FROM ORGANIC HEART DISEASE, APOPLEXY AND NEPHRITIS COMBINED.

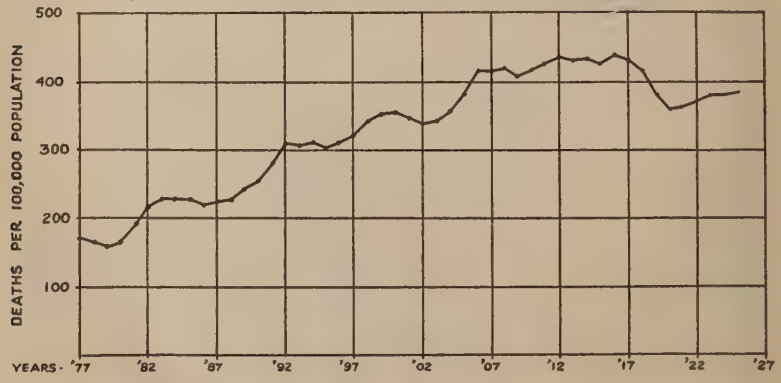
Smoothed 3-year averages.
Deaths per 100,000.

Year	*Rate*	*Year*	*Rate*
1877	173	1888	230
1878	167	1889	245
1879	163	1890	258
1880	168	1891	282
1881	194	1892	309
1882	221	1893	307
1883	229	1894	314
1884	230	1895	304
1885	231	1896	313
1886	223	1897	323
1887	227	1898	342

Year	*Rate*	*Year*	*Rate*
1899	353	1913	430
1900	355	1914	433
1901	348	1915	425
1902	341	1916	438
1903	344	1917	431
1904	358	1918	416
1905	381	1919	384
1906	415	1920	362
1907	415	1921	363
1908	420	1922	370
1909	408	1923	378
1910	419	1924	379
1911	426	1925	382
1912	433		

It is evident that the mortality associated with damage to, and degeneration of, the heart, arteries and kidneys rose steadily and rapidly from 1877 to 1907, then rose slowly to 1916, fell sharply to 1920 and then rose again, but slowly.

FIG. 6. COMBINED DEATH RATE FROM HEART DISEASE, APOPLEXY AND NEPHRITIS IN NEW HAVEN. SMOOTHED THREE YEAR AVERAGES.



In general there is distinct encouragement in these figures to hope that the increasing mortality from heart disease is really in process of abatement. The outlook

is distinctly better than that revealed by our analysis of cancer statistics in a preceding chapter.

2. **The Control of Heart Disease and Allied Disorders.** The factors at work in promoting pathological changes of the heart, arteries and kidneys are many and diverse. In childhood, the majority of such disorders are due to attacks of acute communicable disease or to focal infections resulting from diseased teeth or tonsils. In early adult life, venereal diseases begin to play a leading role; while, in later years, true degenerative changes due to the aging of the living machine become predominant. No sharp line can, of course, be drawn between these various influences since effects are often only apparent after a long period of time. A man may die of heart disease at sixty largely because he had an infected tonsil at twelve.

It is evident, then, that many different phases of the public health movement have an indirect but powerful effect upon the mortality from cardiac, arterial and renal diseases. These elements in the death rate cannot fail to be influenced by all that is being done for the control of scarlet fever and diphtheria, for the correction of defective teeth and tonsils, for the reduction of venereal disease and for the promotion of habits of healthy living. We are inclined to believe that the check in "the rising tide of heart disease" manifest in New Haven since 1907 and the encouraging reductions manifest at ages under 70 are the result of such efforts.

In addition to these indirect methods of control it is of course essential that every community should provide specific machinery for dealing directly with the problem of heart disease when it actually arises. Furthermore it is vital that such machinery should be, so far as possible of a preventive, rather than of a purely ameliorative type.

We cannot too strongly emphasize that the heart, like any other organ of the body, has remarkable powers of repair if the healing force of nature be given its opportunity. Even with the person past middle life, where actual repair may be improbable the observance of a proper hygienic regimen may postpone for years any serious results; and with children such a regimen will frequently lead to a complete elimination of the abnormality.

In dealing with the diseases of the heart, arteries and kidneys we need, then, just as in the case of tuberculosis or cancer, provision for early diagnosis, for medical and hygienic treatment and for after care.

3. **The Problem of Case Finding.** The most hopeful field for the control of heart disease lies in the detection and treatment of cases among children of school age, since it is such cases which most frequently and most readily yield favorable results. In general it may be assumed that 1 per cent of school children will be found to have recognizable cardiac defects or some 300 children in New Haven. The recent special study of underweight children by the Board of Education has brought to light a number of cases of this kind. They should be detected by the regular routine of school medical examination but, as pointed out in an earlier chapter, this examination is at present too superficial to yield adequate results.

Among adults the chief agency to which we can look for bringing early cases of heart disease to the attention of the medical profession is the Visiting Nurse Association. During the year 1926 the Association discharged 45 cases of cerebral hemorrhage and apoplexy (13 visits having been made to the average case since its admission) 68 cases of heart disease (29 visits per case) and 101 chronic diseases of the genito-urinary system (8 visits per case). The

work of the Association, however, is chiefly confined to the care of definite and pronounced conditions of this type and but little is done either in the seeking out of early cases for examination or in the follow-up of post-hospital cases.

4. **The Heart Clinic.** The center of the community program for the control of heart disease is the cardiac clinic and for the past five years, New Haven has had ample modern facilities of this type at the New Haven Dispensary. Two heart clinics a week are held, one for children and one for adults and a special fund provides for a whole-time worker (Miss Alling) to follow up cases and to secure clinic attendance and institutional or home care.

During 1927 the statistics of these clinics were as follows:

	Children.	*Adults.*	*Total.*
Number of patients	133	166	299
Number of visits to clinic	375	505	880
Number of home visits	359	...	359

It is of interest to note that the total number of patients carried increased from 246 in 1926 to 299 in 1927; the number of visits to both clinics from 846 in 1926 to 880 in 1927; and the number of new patients in the children's clinic from 37 in 1926 to 56 in 1927.

Excellent hospital care for heart cases is of course provided at all the three hospitals.

5. **Post-Hospital Care.** In the case of heart disease, more perhaps than with any other disease except tuberculosis, the problem of post-hospital care is of paramount importance. In a considerable proportion of cases more or less prolonged institutional treatment may be desirable and in another group of cases,—or in the same group of cases at a later period,—nursing follow-up in the home is essential.

In New Haven the Children's Community Center furnishes excellent facilities for the after-care of children with cardiac impairments but on a very limited scale. Twenty-five cardiac cases were thus cared for in 1926. The Convalescent Cottage where such cases are received has, however, only 24 beds, a figure quite insufficient to meet the needs which would be revealed by an intensive program of school medical inspection. It seems probable however that the facilities for convalescent cases at the Community Center could be materially expanded without additional building costs.

For adult cases there are no good provisions at all in New Haven for post-hospital care; and this deficiency seems to us an urgent and a serious one.

6. **Summary and Recommendations.** It appears from the facts presented that diseases of the heart, arteries and kidneys constitute the most important of all New Haven's health problems of the present day, accounting for one third of the deaths from all causes whatsoever. Due probably to general advance in the control of acute and focal infections and venereal disease and to the promotion of habits of personal hygiene, the alarming increase in these disorders which took place from 1877 to 1907 has been checked but they still deserve primary attention from the standpoint of the conservation of life and health. This is a particularly important problem in New Haven since the death rate from organic heart disease for the five years 1920-24 averaged 186 in New Haven as against a rate of 167 for the Registration Area as a whole.

New Haven is adequately provided for in the central feature of community machinery for dealing with heart disease,—a well-equipped cardiac clinic. Our weaknesses lie in case-finding through adequate medical inspection of

school children (a problem discussed in an earlier chapter) and in provision for post-hospital care. The after care of adults will be considered in a later chapter. The after care of children clearly demands expansion of the admirable facilities of the Community Center.

Finally, in the case of these diseases of the heart, arteries and kidneys, as in the case of cancer, it seems most desirable that the Health Department should recognize the existence of this vital problem by providing central facilities for studying the statistics of these diseases and coordinating the general program for their control. Continuing study of mortality from the various diseases of this group by age, and of their relation to rheumatic fever, acute communicable disease and focal infections should prove of the greatest interest and value.

The problems of medical inspection of school children and of after care for convalescent adult cases being dealt with elsewhere, there remain three specific suggestions for the development of this important field of public health work in New Haven.

Recommendation 92. That the Board of Managers of the Children's Community Center give serious consideration to the possibility of a substantial increase in the facilities available for the care of convalescent cardio-vascular cases and to the provision of special medical care for such cases.

Recommendation 93. That the Visiting Nurse Association should make a more definite effort than at present to locate cases of early cardio-vascular disease and bring them to private physicians or to the clinic for examination; and that the follow-up of post-hospital cases should also be included as a definite part of the program.

Recommendation 94. That the Department of Health should make provision for the continuing analysis of statistics in regard to cardio-vascular disease so that the campaign against these diseases may be wisely planned and its results justly evaluated; and for definite emphasis on the control of such diseases as a fundamental part of its educational program.

Chapter XXVI.

PUBLIC HEALTH EDUCATION.

With the cooperation of Ira V. Hiscock, Assistant Professor of Public Health, Yale School of Medicine.

1. **Scope of Health Education.** Education of the public in the principles of healthful living is an important function of the health department and of other health agencies of a community. This is one means of establishing a favorable public opinion which is fundamental for success. It is especially important to educate the children of the community in the rules of hygiene so that they may themselves have sound health and thus safeguard the community in the future.

Activities designed for the purpose of teaching the children these fundamentals have been described in the chapter on school health supervision. It was noted that both the Board of Education, and the Board of Health rightly assume considerable responsibility for this work. Experience has shown that the best health teaching programs are those so arranged that the health instruction is correlated with many different courses in the regular curriculum. It is gratifying that more attention is being given to this problem in teacher-training institutions. One of the best means of imparting health education to the community and of health building for the future is through the development of a hygienic conscience in school children, who incidentally in many cases carry the message to their parents. This can only be done through organized, consistent education by teachers, nurses, physicians and other members of the school health supervision staff. It is es-

sential that close cooperation should exist between the departments of health and education in the planning of the health phase of the school program.

This chapter deals primarily, however, with activities in popular health instruction, although brief consideration will be given to the health education activities (not previously described) of various health and welfare agencies in the city. Dr. Hermann M. Biggs, in 1922 made the following statement at a conference in Washington: "It seems to me that we have accomplished almost everything by propaganda. . . . The death rate in New York City from preventable diseases has been reduced 50 per cent. This has been by the education, not of the highest class, but of the lowest class. . . . First we educate the tenement-house population and teach the children. They will teach their parents. The parents in turn teach the medical profession. You can teach the mass of the people and they will teach the leaders." The cooperation of an educated people is essential if modern health work is to succeed.

2. **Popular Health Education Through the Health Department.** In New Haven, as in many other cities, popular health education work in the health department is carried on largely by the health officer with the aid of bureau heads. According to a study of this problem in 1923 by the U. S. Public Health Service, in cities of a population class similar to that of New Haven, a few exceptions to the above situation were, however, noted. Syracuse charged $5,200 of its total budget to health education supervision, while Lynn expended $2,500. For purposes other than supervision, Chicago expended $38,000 for printing, New York $16,000, and Syracuse, $6,000.

A. **The Press.** Newspaper articles, lectures, pamphlets, bulletins, and exhibits appear to be the most effec-

tive media of popular health education used by municipal health departments. Certainly, one of the most important channels of health instruction is the daily press. The New Haven press cooperates with the health officer in keeping the people informed of the most important health activities and tendencies. Press reporters interview the health officer daily and render a valuable service to the community through the publication of health articles from this source. The local papers also frequently carry summaries of the weekly bulletin of the State Department of Health.

B. **Lectures and Conferences.** Lectures on various public health topics are given throughout the year by the health officer and members of the staff, reaching civic clubs, and other men's and women's groups of the city. Radio talks are occasionally given. Motion pictures of a health nature are frequently shown in the moving picture theatres.

It is important that the staff should have the benefit of continuing instruction in public health fundamentals and in new developments in preventive medicine. This end is successfully accomplished through weekly staff meetings at which problems of the various departments are discussed and a special topic of timely interest is presented by an outside speaker. Doubtless, a considerable part of the educational work of the health department is effected through the individual contacts of the personnel with the public, as through the home visits and group talks of nurses, the individual and group talks of the dental hygienists, and the various types of inspection services.

C. **Pamphlets.** The utilization of pamphlets in health education has become popular throughout the country. The value of such pamphlets depends not only upon their subject content, but also upon their attractive-

ness. Good printing is obviously essential. An excellent diphtheria prevention pamphlet, "One Disease Less," has been prepared and widely circulated by the department. It is also the practice to mail a birthday letter and card from the health officer to each baby on its first birthday, urging among other things that the child be protected from diphtheria. A tuberculosis booklet has recently been prepared in cooperation with Mrs. Violet Hodgson of the Visiting Nurse Association. Health publications of the State Department of Health and of the Federal bureaus are also utilized.

D. **Bulletins and Reports.** A monthly health bulletin is published which contains short articles of a timely nature, together with outstanding statistics of the previous month. This bulletin reaches a mailing list of 2,000 persons, approximately half of whom are interested lay citizens of New Haven, the others being chiefly health workers, physicians, dentists, and nurses. The health department also publishes an annual report, describing the work of the different departments, which is distributed among city officials and health workers.

E. **Exhibits.** In the survey of municipal health department practice to which previous reference has been made, it was learned that virtually one half of the 100 departments use some kind of exhibit during the year. Health exhibits are occasionally prepared in New Haven for special purposes, such as food shows, industrial expositions, May Day, and similar occasions. In the department office are displayed a few charts and pin maps indicating the trends of disease or location of cases, as well as one large map showing the sources of the milk supply. Health posters, chiefly designed to teach lessons regarding child

hygiene, of tuberculosis and diphtheria prevention and proper food habits, are prominently displayed in the health department offices, in clinics, and in the physicians' and nurses' rooms of schools. An effective float was prepared for one of the street parades during Boys' Week, and this was preceded by a group of boys appropriately clad and organized to represent the health department in miniature.

Possibly one of the most elaborate and at the same time most effective efforts in health education was made at the time of the New Haven Progress Exposition held from January 26 to February 5, 1927. Gathered under one roof, in a large six-story Winchester building (each floor having 200,000 square feet of space), were displayed those activities which stand for progress in many phases of New Haven life, including the industries, public utilities, and trades. It was calculated that 225,000 people visited this exhibition.

The health department exhibit was made up of five sections. The first section of the exhibit represented the growth of the department since its creation in 1873. Health departments in miniature were set up for each year selected for demonstration (1873, 1913, 1926) showing population, budget, personnel, activities, prevalent diseases and death rate. The second section on diphtheria had as a background an effective colored poster 20′ x 9′. An ingenious flashing sign showed the decrease in cases and deaths from diphtheria since the toxin-antitoxin campaign started. The third section was on milk. A large state map with cows in relief represented the source of milk; there were models of a good and of an unsatisfactory dairy barn; as well as a mechanical book with pictures showing the progress in the milk industry. The fourth section was on tuberculosis. X-ray films of chests were displayed as well as pin maps, graphs, and attractive pictures of State sana-

toria. The fifth section was a Bug House, built in a manner to attract attention, in which were displayed by means of microscopes and viewing boxes various bacteria for which examinations are made in the laboratory. Four people were always in attendance to give information and to answer questions. A large amount and variety of health literature was distributed.

The Board of Education also featured health and nutrition as a part of its exhibit at the Progress Exposition and the Public Library made a display of health literature.

F. **Appraisal.** The appraisal form for city health work allows only 20 points for popular health instruction, distributed as follows: educational health pamphlets, weekly health bulletins and health lectures, 2 points each; monthly health bulletins, 5 points; newspaper publicity, 6 points; showing of motion pictures, 3 points. New Haven received 18 of these 20 points, two points being lost because no weekly health bulletin is published. Only a few cities publish weekly bulletins at present. Considering New Haven's problems as a whole, it is believed that the publication of a weekly bulletin is not feasible, and that the money and time necessary for such work may be more effectively expended along other lines.

G. **Needs.** With the continued development of health department activities, and the demonstrated opportunities in the field of health education, it would seem desirable to consider expanding the health education program. On account of its intimate connection with department policies, this work should be under the direct supervision of the health officer, and should continue to receive a considerable share of his attention. The routine features of the work, however, might well be discharged by a full-time assistant

versed in public health principles, but particularly experienced in the technique of popular education. Such a man or woman could obtain the necessary technical material from the health officer and his bureau chiefs, in connection with a well conceived educational program. It is also believed that consideration might be given to the possibility of securing for this position a person trained in statistical work. There is greatly needed a systematic and continuing study of the health, sickness, and death records of the city to provide basic data to aid in improving to a still higher degree the health administration work of the city.

3. **Activities of Voluntary Agencies.**

A. **Chamber of Commerce.** As in other phases of public health work discussed in the various chapters of this report, voluntary agencies play an important part in the health education program of New Haven. The valuable services of the Chamber of Commerce in directing a campaign for the prevention of motor vehicle accidents has already been mentioned. The New Haven Automobile Association, through its bulletin and in other ways, is cooperating in this educational campaign. As described elsewhere, the Chamber of Commerce is also conducting an anti-mosquito campaign, and is interesting the public in this matter through the press, bulletins and public meetings.

B. **Community Chest.** The Community Chest, directly and through its committee on public health, has held several public meetings, at which well known speakers have given addresses on public health topics of interest and value to the community.

C. **Medical Societies.** In connection with the annual Clinical Congress of the State Medical Society, there is

stressed each year the value of annual physical examinations. The importance of periodic health examinations to the general public for the early detection of abnormal physical conditions, many of which can be corrected if discovered early, cannot be too strongly emphasized.

The New Haven Medical Association has recently established a Committee on Public Relations which has, as one of its specific functions, cooperation with the Health Department.

D. **Y. M. C. A.** The Young Men's Christian Association is known as a recreational, educational, social and religious center for boys and young men from all walks of life. The physical department of the Association aims to promote physical, mental and moral efficiency by means of exercise, recreation and education. A medical and health committee is developing a program which should materially benefit the members of the Y. M. C. A. and industrial and church groups of men and boys. It is the policy to require medical examination of all boys participating in games and athletic contests; and such examinations are recommended to all men using the department. During the year ending September 1, 1927, 421 examinations were made. Gymnasium classes are well organized, with facilities for special instruction and recreational guidance of many different groups.

A commendable effort is being made by the staff and the health committee to develop a practical health program including health education. Bulletins and news letters carrying health articles are issued from time to time. It is believed that certain of the industrial plants, especially, might benefit from wider use of the Y. M. C. A. facilities. A plan for comprehensive industrial health education is being developed, and as occasion offers, special considera-

tion is given to the needs of individual industrial plants. It is noteworthy in this connection that the New York, New Haven and Hartford Railroad Company has developed a program of health and physical education which reaches several thousand employees. The athletic and social activities are carried on through associations and committees of employees. The health phase is at present confined to articles published in the monthly magazine of the Company, and to contacts through first aid and safety first committees.

E. **Y. W. C. A.** The Young Women's Christian Association, in addition to other activities, offers to girls and young women a program of physical training and recreation, and supervises women's activities in the Industrial Recreation Federation. A committee on health education has developed a program of physical training and health education. A physical director is employed to aid in carrying out the work and is rendering valuable service.

Medical examinations are required of girls before entering gymnasium classes, and an effort is made by the physical director to secure the correction of defects discovered. In 1927 there were 243 examinations made by the medical examiner, Dr. Margaret Tyler. Of the 213 examinations made in 1926, 49 per cent showed underweight, 37 per cent feet defects, and 90 per cent posture defects, in addition to other conditions discovered.

The Weekly News of the Industrial Recreation Federation for Women contains at least one health article. A monthly bulletin is published for the members which also carries an article directing attention to the rules of healthy living. In 1927, a social hygiene program was developed, which included addresses to women and girls by representatives of the American Social Hygiene Association and a

course for leaders of girls' groups, also conducted by a member of the staff of that organization. A small library of social hygiene books has been provided and is extensively used.

F. **Y. M. and Y. W. H. A.** The Young Men's and Young Women's Hebrew Association serves Jewish people of all ages. Educational classes, lectures and community meetings are included in the program. One series of five lectures has dealt with social hygiene problems, while another, consisting of 10 talks to mothers, was on the general subject of "The Child and the Home." Instruction in Junior Clubs, an afternoon recreation school for children ranging in age from 8 to 12 years, and first aid demonstrations, comprise the remainder of the health program of this organization.

G. **American Red Cross.** The American Red Cross has an active local chapter in New Haven which has developed health and safety activities of an educational and practical nature. Classes in home hygiene and care of the sick are conducted each year at the Dixwell Community House by a graduate nurse who is a member of the Red Cross Nursing Service. In 1926 there were 4 such classes with 70 pupils. These classes are composed largely of housewives, who are taught the principles of sanitation and personal hygiene. Literature is supplied free by national headquarters.

Highly commendable results are obtained in the Life Saving and First Aid classes. Any local organization or group of individuals having at their disposal a swimming pool, has the privilege of taking the National Red Cross life saving tests. Once a year, or more often if requested, an American Red Cross field representative comes to New

Haven to give life saving tests and to instruct the examiners in the latest methods. This information is passed on through the leaders to the candidates for the tests. One week in May is usually devoted to this national representative, and the Yale pool is available at this time.

In 1927 this service reached 600 people, for the preceding year approximately 500 people. Tests are required of all of the girls of the New Haven School of Gymnastics.

There are however no adequate facilities within the city for teaching swimming to women and girls. There are but 2 municipal pools in New Haven, one of which is not usable. The other, the St. John Street bath house, is not modern, and there is no instructor. At Fort Hale and Lighthouse beaches, there are no instructors, although there are three life guards at the latter beach. It is hoped to have instructors at these bathing beaches, and also to provide pools and instructors in the junior high schools.

During 1927 the first aid branch of the Red Cross work reached 320 New Haven people who became qualified "first-aiders". There were 42 lay instructors in industry representing 22 industrial organizations, and 14 other instructors in other local groups such as the Safety Council, Camp Fire Girls, and Boy Scouts. There are at present, however, only about 25 active instructors.

The local Red Cross forms the headquarters through which literature and information from the national organization are distributed. The local chapter of the Red Cross administers the first aid examinations, which are prepared at Washington.

It is proposed to build up a faculty for industry and extend this first aid work. It takes about 20 hours to complete the lay course; which is arranged for ten periods of 2 hours of instruction weekly. This is practically all vol-

unteer service. Eighteen instructors of the New York, New Haven and Hartford Railroad have been trained in the principles of first aid, and they in turn are passing on the information to the workers in this organization. A similar program is carried on in various other industrial concerns.

H. **The Public Library.** The New Haven Public Library has a good collection of books and pamphlets on personal hygiene and public health which should be of considerable interest and value to the public. A selected list of these books will be furnished to persons interested by the Readers' Adviser of the library, who is prepared to aid those who wish to educate themselves further by reading authoritative health publications.

4. **Summary and Recommendations.** Certain other educational activities, chiefly related to children of school age, have been discussed in the chapter on school health supervision. The work of popular health instruction has, however, become recognized as one of the essential functions of municipal health service.

On the basis of present knowledge and experience, it is certain that with only a small additional outlay, but with closer coordination of activities, much more can be accomplished in New Haven than at present. "Supervision over health education activities and the responsibility for the successful development of so important a feature of local health service should not be left to the ingenuity or zeal of subordinate positions in the health department." While it may not be practicable at once to create a separate bureau of health education in the local health department, it does seem essential to employ a competent person to take charge of this work under the general direction of the health officer. It should thus be possible to develop a defi-

nite and constructive policy for inaugurating and continuing a far-sighted, city-wide program of popular health education to keep pace with the intellectual capacity of the community and at the same time anticipate its potential possibilities.

Recommendation 95. That a comprehensive program of popular health education for the city as a whole be developed, with a separate allotment in the health department budget for this purpose; that efforts be directed, through conferences or other means, to a closer correlation of the activities of all voluntary agencies in the field of popular health education, under the general leadership of the health department; and that a group of lecturers be organized, consisting of health department employees, members of the local board of health, of the local medical and dental societies, and other appropriate groups, and that systematic measures be developed to make these lecturers available to men's and women's clubs, churches, and fraternal orders, and to the various civic organizations of the city.

It is interesting to notice that Dr. C. A. Lindsley, the first health officer of the city of New Haven, in his second report for the year 1874, discussed as follows the problem with which this chapter is concerned:

"When the public come to comprehend our true official character, as in time they will, we shall be expected not only to supervise and, when possible, direct in matters affecting public health, but also to become a source of information in regard to all questions of public hygiene. We are to know and be able to inform and advise in regard to everything connected with the physical well being of our fellow citizens."

This is an ideal which still remains to be realized.

Chapter XXVII.

MEDICAL INSTITUTIONS IN NEW HAVEN.

By Michael M. Davis, New York City, with the co-operation of Leonard Greenburg and Louise W. Farnam.

1. **Scope of Study.** The purpose of this section of the report is to judge the sufficiency of hospital and clinic service in New Haven, the relation of these institutions to one another, to the medical profession and to the public which use and support them.

We have to consider:

(1) Service in hospitals to the acutely sick.

(2) Service to the chronically sick in hospitals or other institutions.

(3) Service in clinics to ambulatory cases of sickness.

(4) Service to patients convalescing from illness.

2. **Hospitals.** Twelve institutions providing care for the acute, chronic or convalescent sick are listed in Table I. The small provision for chronic patients at the County Home at Springside and in a few other institutions will be discussed later. New Haven Hospital, Grace Hospital and St. Raphael's Hospital are the three well-known institutions, incorporated for public service and not for profit, which provide care for the acutely sick. The table also shows three little hospitals carried on as business enterprises. There are several other small proprietary hospitals in West Haven for which statistics have not been gathered.

TABLE I.

HOSPITAL SERVICE IN NEW HAVEN.

1926*

Name of Hospital	*Types of Service Gen. Matern. etc.*	*Total No. Beds*	*Beds classified as Ward*	*Priv.*	*Semi Pr.*	*No. of Patients*	*Hosp. Days*	*% Occupancy*
1	2	3	4	5	6	7	8	9
Public Service								
1 New Haven	General	410	318	60	32	6,177	102,527	68.7**
2 Grace	General	247	111	42	94	5,159	63,398	62.3
3 St. Raphael's	General							
Total for Public Service		220	145	60	15	4,668	65,366	81.3
		877	563	162	141	16.004	231,291	72,
Proprietary								
1 Whitney Ave.	Gen. & Mat'y.	10		10		210	2,800	57.
2 Dr. Jack's	Surgery (N&T)	8		8		250	1,400	48.
3 The Evans	Surgery	6		6		117	1,800	82.
Total Proprietary		24		24		577	6,000	68.
Grand Totals		901	563	186	141	16,581	237,291	70.

* Calendar year 1926.

** Deduct infectious disease days (13,760) leave 88.767. Deduct 78 infectious disease beds, leave 332 beds, making 121,180 possible hospital days. Occupancy without infectious disease—73%.

Chronic Beds.

1	Jewish Home for Aged	35
2	Home for Friendless	3
3	Carlson Hospital*	10
4	Lydia Russell Hospital*	4
5	Parkhurst Hospital*	12
6	Springside Hospital	60
	Total Chronic Beds	124

* Proprietary.

While the three main institutions are general hospitals, there is considerable contrast in the kinds of patients they receive, classified from the medical standpoint. In Grace Hospital and St. Raphael's Hospital, two-thirds of all cases are surgical, while in New Haven Hospital surgery constitutes only a little over one-fourth of the work. New Haven Hospital is the only one in which specialties are much developed. This hospital also provides 78 beds for infectious diseases. The City of New Haven is to be congratulated on having made an arrangement of this kind which relieves the public of the necessity of providing an

independent hospital solely for communicable cases, such as scarlet-fever and diphtheria. The small, independent, communicable disease hospital is expensive to maintain, since the demand for beds is very uneven and a much larger overhead staff must be carried than would be needed during a considerable portion of each year. The 78 beds in the New Haven Hospital assigned to communicable disease, show an average occupancy for the past three years of slightly over 50 per cent; a much higher average than is commonly maintained in independent communicable disease hospitals.

The city has a so-called "Pest-House" at Springside which has been retained for the care of small-pox. All authorities now agree that there is no reason, from the standpoint of public welfare or from that of the patient, why cases of small-pox cannot be well and safely cared for in a pavilion of a general hospital. It is to be hoped that permanent arrangements will be made so that the occasional case of small-pox arising in and about New Haven can be hospitalized in the communicable disease pavilion at the New Haven Hospital as was done in the epidemic of last winter. The plant at Springside might well be retained under city ownership and kept in general repair, in case of an unusual and yet possible large epidemic, as of influenza.

The statistics of births show that in 1926, 39 per cent of the 3,333 babies born to mothers resident in New Haven were delivered in hospitals.* The three main hospitals in New Haven cared for 1,650 confinements in 1926, constituting about eleven per cent of the total number of their patients. Eighty additional births were recorded from the Whitney Avenue proprietary hospital. Of these 1,730 confinements, 453 were of mothers residing outside the city.

* Figures cited in Chapter XV are not corrected for non-residents.

The percentage of births in New Haven occuring in hospitals is lower than in many other cities, but not so low as to call for remark.

A striking fact is that one-third of the entire work of the hospitals is for patients from outside New Haven. In the three main hospitals in 1926, 5,555 out of 16,004 patients (34 per cent) resided beyond the city limits. The proportion is much smaller in obstetrical and medical work than in surgery. The hospitals in New Haven have to serve the surrounding territory as a definite part of their obligation. This fact has an important bearing on policy, as will be brought out later.

We have to define the charitable service of the hospital in two ways; first, in relation to the physician or surgeon, and second, in relation to the patient.

The modern hospital, incorporated as a charitable service, has become a place for medical practice. whose advantages are sought by all from the well-to-do who can pay the full cost of care including the fee of the physician or surgeon, to those who receive entirely free care. Private and semi-private patients pay a professional fee to the physician or surgeon, as well as hospital fees. Ward patients ordinarily pay no professional fee and may pay the hospital up to a fixed ward rate or may receive care entirely free, or the city may pay the hospital an agreed per diem rate for their care. Table II shows the proportion in 1926 of private and semi-private patients and of ward patients classified according to whether they paid the ward rate or were free or city cases. Private and semi-private patients at New Haven Hospital constituted only 27 per cent of all cases, whereas they were 61 per cent at St. Raphael's Hospital and 67 per cent at Grace Hospital. At. St. Raphael's Hospital and at the New Haven Hospital about one-eighth of all patients were given care entirely

free, while only one-quarter of one per cent received free service at Grace Hospital.

From the standpoint of free work done by physicians for hospital patients, it is interesting that just about one-half of all of the patients at the three hospitals taken together were ward cases receiving free service from the medical staff of the hospitals. This proportion varies among the hospitals somewhat as do the other figures, New Haven Hospital showing the largest proportion (74 per cent), St. Raphael's Hospital 40 per cent, and Grace Hospital 33 per cent.

TABLE II.

HOSPITAL PATIENTS IN THREE NEW HAVEN HOSPITALS 1926.

PATIENTS BY LOCATION, MEDICAL TYPE AND ECONOMIC TYPE.

	*New Haven**	*Grace Hospital*	*St. Raphael's*	*Total*
Total Patients	6177	5159	4668	16,004
Patients from New Haven	3966	3711	2772	10,449
" outside New Haven	2211	1448	1896	5,555
Percentage New Haven..	64	71.9	59.4	66%
Medical Patients	829	1113	248	2,190
Surgical "	1641	3296	3055	7,992
Obstetrical "	549	750	488	1,787
Infectious "	725	....	....	725
Other "	2433	....	877	3,310
Private Patients	975	1149	1418	3,542
Pecentage Priv. Patients .	16	22.2	30.8	69%
Semi-private Patients ...	692	2294	1410	4,396
Percentage Semi-Priv. Pts.	11	44.5	30.4	85.9
Paying Ward Patients ...	3223	1353	1200	5,776
Percentage Paying Ward Patients	52	26.2	25.7	28%
Free Ward Patients	631	14	525	1,370
Percentage Free Ward Patients	13	0.27	11.3	12%
"City" Patients in Ward.	456	349	115	920
Percentage "City" Patients in Ward	8	6.8	2.0	16.8

* Fiscal year—July 1, 1925 - June 30, 1926.

There are in New Haven, as previously mentioned, a number of small medical institutions organized for profit. These proprietary institutions are licensed by the State Department of Health, and when they receive persons who need care because of age rather than illness, they must also be licensed by the State Department of Public Welfare. Several of the institutions, therefore, must secure a license from both departments. Maternity hospitals are licensed by the local health authorities. The quality of service in a proprietary hospital depends upon the standard of professional care which the patient's private physician or surgeon personally maintains and also upon that which he requires from the hospital management. In proprietary hospitals, conditions are not supervised by a board of trustees or by an organization like a church, which has no financial interest in the work and has a sense of responsibility to the public. Closer supervision of proprietary hospitals by public authority, such as the State Department of Health, is desirable. There should be inspections by a qualified person at least annually, and certain minimum requirements should be prescribed with which the hospitals must comply. It is hardly necessary to add that such supervision should extend to all hospitals, but there is especial need for it in the proprietary institution. The existence of the proprietary hospital is, as a rule, due chiefly to the fact that certain physicians, particularly those engaged in surgery and obstetrics, have not received appointments on the staffs of the main hospitals for one reason or another. They make manifest a demand to which the proprietary hospital is a response.

To what extent are the hospital accommodations in New Haven sufficient for the needs of the public so far as the care of acute disease is concerned? One of the indexes

of sufficiency is the occupancy rate, or the percentage of hospital beds available which are actually utilized. The necessity for classifying patients according to age, sex, and to some extent, disease, the seasonal fluctuations of illness; and the need for periodical renovation of wards and rooms are among the factors which render it impossible for any hospital to have all its beds full throughout the year. A hospital running to 75 per cent of its theoretical capacity is doing quite well. Ratios of 80 per cent and over are not uncommon. Table I shows that, taking the three main hospitals together, the occupancy rate was 72 per cent. Lower figures than this have frequently been found in other communities, although one would like to see it higher.

At St. Raphael's Hospital the occupancy rate has been over 80 per cent for two years. The occupancy rate at Grace Hospital has shown a marked decline in the past three years and is now unreasonably low. In 1927 it was only 61.4%; in 1925, 64%, and in 1926, 62.3%. The financial difficulties of the institution probably account for this. At the New Haven Hospital the percentage of occupancy rose from 54 per cent in 1924 to 61 per cent in 1925, and to nearly 69 per cent in 1926. In 1927 it was the same. The infectious disease pavilion at the New Haven Hospital necessarily has a low occupancy rate, and if the 78 infectious disease beds are omitted from the computation to render the rate comparable with the other institutions, we have at the New Haven Hospital for 1926, a 73 per cent occupancy rate.

Hospital facilities in New Haven must, of course, be considered in relation to population. The 901 beds listed in Table I for the three general and three proprietary hospitals caring for acute diseases, give a ratio of just five beds per thousand population for the city (estimated popu-

lation in 1926, 181,000). This ratio however should not be taken as the figure for the community, since one-third of the service is rendered to patients living outside the city limits. In order to make a correct comparison between hospital beds and population served, we should have to reduce the number of beds by one-third, giving us a net number of 600 beds available for the 181,000 people in New Haven, or 3.3 beds per thousand.*

The number of hospital beds needed for a given population is not a fixed quantity. In rural communities and among immigrant populations not previously accustomed to hospital service, care in a hospital is sought only in the emergencies of illness, and between one and two hospital beds per thousand population is all that will be utilized. In settled communities long accustomed to hospitals, a much larger number of beds will be effectively made use of. Living conditions also have a marked influence. Major surgery necessitates hospital care, but with obstetrical and medical cases, the extent to which the hospital is sought, depends in considerable degree upon housing conditions and other factors both psychological and economic. Conditions in New Haven in these respects are somewhat midway between undeveloped communities and a city such as Boston, in which approximately five hospital beds serving acute cases are used per thousand population. The ratio of three-and-a-third beds for the population of New Haven tends toward the lower rather than the upper limit of what might be anticipated for this community. We may expect that in New Haven as elsewhere, demand for hospital care will increase more rapidly than population, and that a ratio of four to four-and-a-half beds per thousand

* If, as is usual in such computations, the beds for infectious diseases were not considered, it would be about 3.1 beds per thousand.

will probably be required within the next ten years. The first step, however, is to make use of the existing beds to a higher percentage of their theoretical capacity.

The representative charitable agencies of New Haven have been consulted in the course of this survey and they testify to relative ease in securing admission for most free cases of acute disease. The city authorities are regarded as cooperating well in paying the usual rate to the hospitals for those cases for whom such payment is legitimate. The accommodations for tonsillectomy appear to be insufficient.

Attention was called to difficulty of securing free care for cases from the suburbs, particularly from West Haven, and to unwillingness of local authorities to pay for care of indigent cases. Town authorities should realize that growing suburbs of a city the size of New Haven must be prepared to meet their obligations for the care of indigent cases in the hospitals of the larger city, else they will ultimately be faced with the much larger expense of maintaining their own hospitals.

The following table shows the ward rates at the three main hospitals and the minimum and maximum semi-private and private rates:

TABLE III.
HOSPITAL CHARGES PER DAY, NEW HAVEN, CONN.

		Semi-Private		*Private*	
	Ward	*Min.*	*Max.*	*Min.*	*Max.*
*New Haven Hospital ...	$3.+	$5.+	$5.+	$8.+	$14.+
Grace Hospital	3.+	4.+	5.+	7.50+	13.+**
St. Raphael's	2.50	2.72	3.57	4.30	8.57

These figures raise the question of the relative needs of the different economic groups of patients. What, for

*Private rooms, New Haven Hospital in Isolation at $45 weekly.
**Only 2 rooms at this price.

instance, would it ordinarily cost a patient for a two weeks' stay? It addition to what is charged by the hospital, the private and semi-private patients must also pay the physician or surgeon. The following table is merely illustrative of cost to patients at **minimum** rates.

TABLE IV.

WHAT WOULD A TWO WEEKS' STAY COST A HOSPITAL PATIENT?

	Hosp. rate Per day	*Expense for 14 days*	*Prob. extras (lab. or opg. fees, etc.)*	*Total Hosp. Chgs.*	*Surgeon's Fee*	*Total expense to patient*
Ward	$3.	$42.	$15	$57.	0	$57.
Min. Semi-private	4.	56.	20.	76.	100.	176.
Min. Private	7.50	105.	25.	130.	150.	280.

This table suggests that there is a wide gap between the maximum expense to the patient in the ward, from whom the physician receives no remuneration, and the minimum cost to the patient in the semi-private room. One hundred and seventy-six dollars is the equivalent of a month's family income of a large proportion of both wage-earning and "white-collar" workers. There should be an intermediate scale to meet the needs of a considerable middle group of the community, who would prefer to pay something to both physician and hospital, and who must now either seek ward service because they cannot bridge the step to the next higher level, or, unwilling to enter a ward, involve themselves heavily in debt.

The testimony of both the hospital administrators and the representatives of the social agencies is that the need tends towards additional, moderately priced private or semi-private accommodations rather than for more ward beds.

3. **The Chronically Sick.** "Chronic" patients include not only those elderly persons who need custodial care in institutions, although cure or restoration to working capacity is impossible, but also persons of all ages whose illness under proper care can be so alleviated, if not cured, as to restore them to useful lives, whereas, with insufficient or inadequate care they remain burdens upon their families or the community. Chronic disease constitutes a large part of private medical practice and its study and treatment is important for the medical student. It is essential to distinguish between those cases of chronic illness which need and can be substantially benefited by careful medical treatment, and those which need only nursing or custodial care for a considerable period. The respective needs of these different types of cases are described in an authoritative statement as follows:

Definition of Chronic Patient, as presented in report by Earnest P. Boas, M.D., Director of the Montefiore Hospital for Chronic Diseases, New York, and A. K. Haywood, M.D., Superintendent, Montreal General Hospital, Montreal, Canada. (Modern Hospital, July, 1923):

"A chronic patient may be described as one who requires hospital care for a period of from three months to several years. From the point of view of institutional care, these patients may be grouped into three categories—Class A, those requiring medical study for diagnosis and treatment; Class B, those requiring nursing care only; Class C, those requiring custodial care only.

"The proper care of a Class A patient demands a complete hospital organization with a resident staff, an attending staff on which all of the specialities are represented, complete laboratory, X-ray and operating room equipment, skilled nursing and dietetic management. Class B patients require much less specialized attention, but should command an excellent nursing service, controlled by a conscientious medical staff. Class C patients need the least care

for, as the classification implies, the treatment of this last group is largely custodial in character. These patients are retained in an institution, not because they require hospital care, but because poverty makes home care impossible. The problem is economic, not medical. All of their wants are supplied with due regard to their respective disabilities by proper sleeping and living accommodations and food."

What do we find in New Haven? There is no institution whatever adapted to the study and care of chronic illness. The County Home at Springside has about one-quarter of its 240 beds assigned for inmates who are unable to take care of themselves and who are more or less sick, but the equipment and the medical supervision available is far below that of a hospital for chronic cases. Springside can provide only a certain minimum of nursing and custodial care, and a general medical oversight. Because of the stigma of pauperism attached to it, it is impossible for this institution to serve patients from self-supporting and self-respecting families of small means, who cannot receive adequate attention in their own homes.

A study was made of the number of patients in the three main hospitals who had been in the institutions for two months or more, on a selected day, December 4th or 5th, 1927. In New Haven Hospital there were 29 cases, in St. Raphael's Hospital, 9 cases, and in Grace Hospital there were 6 cases. The diseases or conditions from which these patients were suffering showed that most of them, however, were not chronic cases, but had relatively long-continued acute illness, or were recovering slowly from serious operations. Two of the nine cases at St. Raphael's Hospital might have been regarded as elderly chronic cases, and two or three more as chronic cases needing close medical attention. At the New Haven Hospital, eight of the twenty-nine cases might be regarded as chronics and the remainder

as acute cases, requiring for one reason or another, a prolonged stay in the hospital.

The proportion of patients staying two months or more in these three hospitals is less than is frequently found. These three hospitals have been properly kept to their primary purpose, that of caring for acute cases. They can do little else until the present number of beds is increased. The chronic case, even of the "A type," requiring careful medical attention, is considerably less expensive to care for than the average case of acute disease, and for this reason and because of the undesirability of mixing chronic with acute cases in the same ward, it is neither medically advisable nor financially economical to care for chronic cases in combination with acute cases, unless a special ward or pavilion is assigned them.

There are three proprietary institutions providing altogether 26 beds, which take chiefly chronic cases, but of course, only those who can afford to pay. Among Homes for the Aged a very few have an infirmary department, where those needing some medical and nursing service may receive it. These provisions, however, are wholly inconsiderable except at the Jewish Home for the Aged, where 35 beds have been set aside in the infirmary department with some provision for medical service for chronic cases of the custodial or "C" type.

The lack of provision for chronic illness is reflected in the fact that in a study made during the first week of December, 1927, of the cases of chronic illness who were under care in their homes by the staff of the Visiting Nurse Association, 55 were reported; 47 women and 8 men. More than half were found to be over sixty years of age and more than three-fourths over fifty years. A considerable portion have been receiving attention from the Visiting Nurse

Association for a period of over a year; the medical attention, (except in three instances where patients were able to go occasionally to a clinic) coming from a private physician. The home care for many of these cases is not regarded as at all satisfactory. At a conference held with the Visiting Nurse Association and other leading charitable agencies in New Haven, very strong feeling was expressed for the need of proper institutional care for chronic patients.

It would be unwise to build an independent hospital for chronic cases of the "A" type, since the maintenance of a relatively small unit of this sort would be much more expensive than if combined with a larger institution, and it would be difficult and expensive to secure a sufficiently skilled medical and nursing service.

The New Haven Hospital has the Gifford ward, named as the result of a special gift for chronic cases. It is strongly urged that when expansion at some later date is made of the New Haven Hospital, wards or a pavilion with at least 30 and preferably 40 beds be included for chronic patients of the "A" and "B" types who could probably be substantially benefited by a period of some month's care. Opportunities for the study and treatment of these cases should be utilized in the instruction of the medical students.

It is recommended that one or more of the Homes for the Aged, especially the larger institutions, such as the Home for the Friendless, and the First Church Home, follow the example of the Jewish Home, in providing more medical or nursing service for cases of elderly chronic patients of the custodial or "C" type.

4. **Convalescence.** Hospital care is only one stage between the onset of an acute disease and the restoration to full health. The first authorities on convalescence in this

country, such as Doctor John Bryant of Boston, and Doctor Frederic Brush of New York, state that the period of convalescence following an acute disease averages about as long as the duration of the acute disease itself. Many hospital patients cannot convalesce satisfactorily at home. After they are discharged from the hospital, they go to work or assume household duties too soon to achieve full restoration to health. Much hospital work is thus wasted. New Haven has practically no convalescent facilities for adults, and only a slight provision for children at the Community Center. For adults, one proprietary institution with seven beds appears to be available, although there may be a few other small proprietary institutions in the suburbs open to convalescent cases who can meet their charges. Small institutions of this sort, even if they were sufficient in number and were open to those unable to pay private rates, cannot be satisfactorily equipped, without prohibitive cost, with facilities needed for convalescent care. Larger units are necessary.

The needs of the convalescent are too often concealed from the eye of both the hospital and the public. The disasters which lack of convalescent care brings to those of moderate means and to the poor, are hidden in the individual home, although as Doctor Lee K. Frankel wrote over twenty years ago, the end results of absence of convalescent care often appear among those "half cured persons" who eventually drift to charitable societies as permanent charges on the community.

It would have been highly desirable, if facilities had been available during the present survey, to find out what had actually happened to typical hospital cases after their discharge. It is strongly urged that

(1) a survey be made in at least one hospital, of from 50 to 100 discharged cases including medical and surgical cases, taken consecutively beginning at any given date, to find out by home visits made a few weeks after discharge, the circumstances under which the patients are convalescing, and their physical condition. The family welfare and nursing agencies could cooperate in such a study and render it inexpensive. If New Haven is like most other cities, the results of such a study will reveal dramatically the need that hospital staffs and management shall look beyond the day of the patient's discharge;

(2) that the attention of charitable givers be called to the need for adequate convalescent provision for adults as well as for children, and that as soon as possible at least one well-equipped home be established. The social agencies and the nurses visiting patients in their homes have testified in the strongest terms to the reality and urgency of this need. It applies, of course, not only to hospital patients but to private medical practice and to some patients of the Dispensary. The publications and "Convalescent Home Standards" of the New York Academy of Medicine will be found useful in this connection.

5. **Out-Patient Service.** Medical care for patients not confined to bed is provided at the New Haven Dispensary, which to all intents and purposes, is the out-patient department of the New Haven Hospital. Grace Hospital maintains a small out-patient service, chiefly in prenatal work, and the City Department of Health carries on a clinic for venereal disease, and the Visiting Nurse Association prenatal, well baby and pre-school "clinics" or "conferences." The total number of visits of patients to clinics per year in New Haven approaches 80,000 or about 450 visits per thousand population. In comparison with a number of

other eastern cities, this figure stands about midway between those in which there is little out-patient service and others in which it is much more extensive. There is undoubtedly room for considerable further increase of out-patient work, particularly in the specialties of medicine and surgery. The bulk of out-patient work, in fact, is usually rendered in the specialties which in private practice are much more expensive for the patient than care from a general practitioner.

The New Haven Dispensary has shown an unusual increase of patients in attendance during recent years, and now averages about 200 patients a day, or some 60,000 visits in a year. It is an important part of the teaching facilities for students of the Yale Medical School.

A sample of patients classified as to residence shows that about one-third came from the central district of the city and nearly three-fourths from within a mile radius. About one-eighth are from outside New Haven. The proportion of patients from outside a mile radius is smaller than at many other teaching clinics of standing, but may be expected to increase. The introduction in some departments, during late years, of a system whereby patients come by appointment, has reduced crowding and waiting, and this, together with additions to the nursing and administrative staff, has enabled many patients to receive individual and careful attention from the physicians.

The building is not adequate to meet the growing demands, and for the best and most economical service should be situated closer to the hospital. It is understood that plans made by the Yale Medical School in conjunction with the New Haven Hospital and Dispensary provide for a new and properly located out-patient building to be constructed as soon as funds are secured. The income derived from

patients paying the twenty-five cent admission fee and small supplementary charges for medicines, X-rays, etc., averaged in 1926 twenty-five cents per patient, being only one-quarter of the total expense. The average cost per visit was almost $1, a figure similar to that found at numerous other clinics in New York City and in Boston. It should be understood that most of the medical service is furnished by the physicians without remuneration. A considerable proportion of patients, including all those referred by charitable agencies are admitted without any fee.

The experience of other clinics indicates that the income from the New Haven Dispensary might be further increased, particularly in some of the special branches of diagnosis and treatment, for which in private practice the minimum cost including laboratory, X-ray and professional fees would be from $10 to $100.

Attention should be called to the provision for treating venereal diseases. The representatives of the American Social Hygiene Association, commenting upon the two institutions providing this service (the New Haven Dispensary and the municipal clinic), regard neither of them as measuring up to present-day standards, (see Chapter XIV). They point out the advantages of a clinic associated with a hospital as distinguished from an unattached clinic and recommend that one adequately maintained group of clinics for syphilis and gonorrhea be carried on at the New Haven Dispensary. This recommendation is endorsed, provided the public health interests are fully considered and maintained at the New Haven Dispensary.

When space becomes available in the future, it is recommended that in combination with the hospital, increased provision be made for physiotherapy and for some occupational therapy for both house and out-patients.

The New Haven Dispensary ought to be of larger service to the practicing physicians of New Haven. Here as elsewhere there are numbers of patients with illnesses which require the aid of specialists or extensive laboratory services to make an accurate diagnosis. The family physicians of these patients often keenly appreciate that their patients need such service but cannot afford to pay for it. An institution like the Dispensary, backed as it is by the skill and facilities of a great teaching and research institution, should offer facilities for diagnosis at a reasonable fixed fee to patients who are referred by physicians. All patients thus sent would be referred back to their physicians and a careful report sent the physician by the clinic. Such a diagnostic clinic would be of benefit to the profession and to many patients of moderate means. The only way in which a self-supporting family of small means can secure this service now is by becoming a client of a charitable society. Diagnostic clinics of this sore exist in New York, Boston, Buffalo and elsewhere.

A hospital without an out-patient department is limited in its service to the public. Recognition of this fact has led more than a thousand general hospitals in this country to establish out-patient departments during the past ten years. New Haven has moved in the reverse direction, financial stringency having recently caused the closure of most of the out-patient work at Grace Hospital. Every hospital, not excluding St. Raphael's, needs an out-patient department both for completing the care of discharged patients, and as a means of forestalling expensive hospital service by treating patients before disease is so advanced that bed care becomes necessary.

6. **City Physicians.** New Haven, like many other cities, makes public provision for the medical care of in-

digent persons in their homes. Eight physicians receiving the nominal salary of $200 a year are appointed through the Charities Department and are on call twenty-four hours a day. It is stated that during 1927, these physicians made approximately 650 calls of which about five-sixths arose through the Department of Charities and the remainder, through the Police Department. This service appears to be intended only for meeting emergencies, as the continuous care of patients in their homes is not part of the duties of these physicians. In this respect, the plan is inferior to that found in Buffalo or in Boston. A certain proportion of indigent chronic cases, with visiting nurse service and continued medical supervision from city doctors, if this were available, might be cared for adequately in their homes. The experience of other cities has shown that there is a small but distinct place for medical care of the poor in their homes and also that the work of the "city doctors" accomplishes much more if a visiting nurse routinely follows up on all cases not at once admitted to a hospital.

7. **Medical-Social Service.** In comparison with other cities and particularly with centers of medical teaching, one is struck by the absence of social service departments in the hospitals and clinics of New Haven. The services of general social agencies are and should be largely utilized by medical institutions for patients needing material aid, advice or special care in their homes. The relationship and policies of the Hospital, the Dispensary, and the social agencies in New Haven, are very satisfactory in these respects, and might indeed be further extended. The New Haven Dispensary, for instance, might well seek the cooperation of the Crippled Children's Aid Society in rendering the specialized follow-up care to its orthopedic patients

which this agency could provide. Such forms of cooperative service, however, do not take the place of social work starting within the medical institutions.

Social service in hospitals and in clinics, assisting the physicians to understand the patient's personality and environment so that an intelligent and practical plan for care can be made and carried out, is now everywhere recognized as a necessary part of the modern hospital and out-patient department. The well-trained social worker in the hospital or clinic does not duplicate, but supplements and aids the work of outside charitable and public health nursing agencies, and in New Haven, the establishment of social service in the hospitals and at the Dispensary is greatly desired by all the agencies consulted. At the New Haven Hospital the chiefs of the clinical services unanimously express their sense of the need. The New Haven Hospital should establish a Social Service Department.

8. **General Problems of Hospital Finances.** The accompanying table, prepared from the annual reports of the three main institutions, shows the sources of income and the relation of income to obligations and expenses. Attention is called to the following points:

1. The income from patients equals 69 per cent of the total current expense. The 27 leading general hospitals of New York City which are members of the United Hospital Fund, show an average of 60 per cent. A number of these institutions, however, show a much higher ratio and the percentage found in New Haven should not excite remark. It will be observed that this percentage varies considerably among the three institutions, New Haven Hospital showing the lowest, which is accounted for by its much larger proportion of free work as brought out previously in this report.

2. Charitable gifts, including the grants from the Community Chest, constitute a significant but relatively small proportion of income of the hospitals as a whole. The basis of the Community Chest grant might well be more clearly related to the actual amount of charitable service rendered by the hospitals.

3. Income from endowment is an important factor at the New Haven Hospital, but is absent or insignificant at the others.

4. The outstanding point brought out by the table is the presence in all three hospitals of debts or obligations, current payments upon which amounted to over $102,491 in 1926. The payments shown in the several hospitals amounted to 12½ per cent of the total income at Grace Hospital, eight per cent at St. Raphael's Hospital and four per cent at the New Haven Hospital.

Debts must, of course, be considered in comparison with resources.

At the New Haven Hospital, with its large endowment and its backing from the University, the debt is a real but not a serious problem. St. Raphael's meets 90 per cent of its expenses out of its earnings, and with its other resources ought to be able to manage, despite a debt service which required eight per cent of its total income in 1926.

At Grace Hospital the case is otherwise. A debt of $730,000 and an annual interest charge of over $50,000 is a millstone around the neck of any such institution. Its earnings from patients reached 77 per cent of its current expenses in 1926, but it had nevertheless to secure nearly $100,000 to balance its books without the debt service of almost $59,000. It is always difficult and as a rule impossible to continue to raise a large sum to meet annual

TABLE V.

FINANCES OF THREE NEW HAVEN HOSPITALS, 1926.

Hospitals.	*Current Expense.*	*Payments on Loans & Bonds.***	*Total Current Income.*	*Classification of Current Income as from*					
				Patients.	*% of Expenses.*	*Endowment.*	*Community Ch.*	*Other Gifts & Misc.*	*State appropriation.*
New Haven*...	$653 570	$26,800 4% of income	$642,703	$371,606	56%	$133,365	$36,000	$101,731 (Yale Univ. $57,000)	$20,000
St. Raphael's...	$191,462	$16,750 8% of income	$207,204	$172,043	89%	.....	$7,639	$12,522	$15,000
Grace	$437,225	$58,941 12½% of income Princ. $730,000	$466,154	$338,969	77%	$11,050	$22,500	$76,135	$17,500
Totals	$1,282,257	$102,491	$1,316,061	$882,618	69%	$144,415	$66,139	$190,388	$52,500

* Fiscal year ending June 30, 1926.
** Interest or principal.

deficits when it is known that a good share of the contributions must go to pay interest on a debt and can have no expression in service to patients. It is equally, if not more unlikely, that nearly three-quarters of a million dollars can be raised to extinguish the principal of the debt, for comparison will inevitably arise in the minds of many potential givers between putting up their money to give a losing institution a fresh start and what the same gift would accomplish if directly applied to an increase of service in another and more favorably financed hospital.

9. **The Hospitals in Relation to the Local Medical Profession.** The opportunity to treat private patients in hospitals is essential to the practice of surgery and obstetrics, and is very important to practitioners in other branches. Connection with ward service in a hospital is of great value to a physician as a means of increasing his skill and prestige, and of advancing himself in private practice. Membership in the staff of an out-patient clinic is important in some specialties and its significance in all branches has increased in recent years.

To what extent do the 361 practicing physicians in New Haven have opportunities to work at the three main hospitals? Table VI shows figures for New Haven and three other cities. The comparison with Syracuse is perhaps most significant because these two cities are of approximately the same size and each has a medical school. The table brings out at once that in New Haven, less than half of all the practicing physicians have staff appointments. There are, however, as will be brought out later, physicians without regular staff appointments who have the privilege of sending in and treating their private patients. The figures in the table have been drawn up with a view of being comparable for the four cities.

TABLE VI.

HOSPITAL AND CLINIC APPOINTMENTS OF PHYSICIANS IN FOUR CITIES.

	New Haven. Pop.—181,000		*Syracuse Pop.—162,537*		*Rochester. Pop.—295,750*		*New York. Pop.—5,619,476*	
	Total No.	*Percentage having appt's.*	*Total No.*	*Percentage.*	*Total No.*	*Percentage.*	*Total No.*	*Percentage.*
Practising Physicians...	361	47%	379	61%	492	51%	10,877	53%
"Class A" Physicians..	353	48%	351	61%	446	57%	9,136	55%
All other Physicians...	8	25%	28	36%	46	44%	1,741	37%
Physicians in General Practice	297	42%	306	52%	371	42%	8,975	43%
Specialists	64	70%	73	100%	121	100%	1,902	98%

Hospital staff appointments have some relation to the training of physicians and to the dates of graduation. Medical schools, as classified by the American Medical Associations, include the Class A schools, of which 97½ per cent of New Haven doctors are graduated; and Class B and C schools and schools formerly in existence but now defunct. Only eight physicians have graduated from B, C and defunct schools and as the table shows, only two of these have staff appointments.

It is also significant that those physicians who confine their practice to specialties generally have hospital appointments. This is not so true in New Haven as in the other cities shown in the table, but is predominantly the case.

An analysis of the hospital appointments in relation to the age of graduation, shows that of those graduated from Class A schools previous to 1900, only about 30 per cent have staff appointments, while of the more recent graduates (1911-1922 Class A schools) about 45 per cent have appointments. Of those graduating since 1923 about 57 per cent have staff appointments. It is perhaps of some interest that the percentage of Yale Medical School gradu-

ates having hospital appointments is lower than that among other Class A graduates. This is true of all age periods, even when Yale graduates of recent years are compared with graduates of other Class A medical schools.

There is a legitimate demand on the part of physicians to extend and improve their practice, and to have opportunities to work in a hospital, to the extent, at least, of caring for their private patients. The absence of this privilege makes it impossible for a doctor to develop himself in surgery. The three hospitals vary in the extent to which they open their private room privileges to the medical profession. Pressure for beds at St. Raphael's Hospital and the large proportion required for the extensive practice of a few members of the staff, give little opportunity for other men. At Grace Hospital private patients in 1926 were referred by 255 doctors, of whom 51 were members of the regular hospital staff. No less than 204 other physicians sent in cases. At New Haven Hospital, the number of non-staff doctors referring cases is much smaller. During two months for which figures were compiled, 20 non-staff doctors treated private and semi-private cases.

It is obviously easier to maintain high standards of professional service in a hospital with a relatively small, carefully selected medical staff than in an institution in which patients are cared for by a large number of physicians with varying standards. The interest of the managing authorities of the institution is in the direction of the most efficient service to the patients occupying its beds and attending its clinics. This interest is sometimes inconsistent with the demands of physicians who wish to treat their private patients in the hospital.

Experience has shown that the more widely a hospital is open to a large group of physicians, the more emphasis must be laid upon the enforcement of at least minimum standards, particularly in surgery and obstetrics. A hospital in which a large number of physicians are caring for patients, as at Grace Hospital, certainly needs to lay great stress upon control of standards, and the testimony given by physicians and others interviewed in the course of the survey, indicates that there has been need for this at Grace Hospital as at similar institutions elsewhere.

10. **Summary and Recommendations.** On the average day of the year, there are some 650 persons with acute diseases in the hospitals of New Haven. Ninety-seven and one-half per cent of these are in the three public service hospitals, and the remaining small fraction in proprietary institutions. About one-half of these patients receive service from physicians without any professional fee, and one-sixth of them without any payment to the hospital whatever.

The community has invested in the lands and buildings of these hospitals a sum, which on the basis of replacement value probably amounts to at least seven and one half million dollars, and the gross annual expense of maintaining these institutions is over a million and a quarter dollars. Only a fraction, probably not more than 15 per cent of the total amount of acute incapacitating illness occurring in New Haven, is treated in the hospitals; yet the hospitals and their associated clinics influence and advance the quality of the care of all disease. Hospitals and clinics are not only teaching centers through association with a medical school; they are also workshops in which practicing physicians may keep abreast of medical progress, and advance their skill and power to serve the community.

Medical research in New Haven, necessarily associated with hospital work, has attracted wide attention. The recent work on scarlet fever, for instance, is of international interest. The Yale University School of Nursing, undertaken in conjunction with the New Haven Hospital, is a new and distinctive educational experiment.

The hospitals of New Haven furnish a third of their total service to patients from outside of the city, and this should be recognized both in considering future hospital needs and as a basis for financial support from public and private funds.

The most serious defect of the hospitals of New Haven on the professional side, is that they are isolated repair-shops for acute disease, rather than links in a chain which leads from sickness back to health and working efficiency. A hospital cannot be more than an isolated repair-shop for acute illness, unless it has at its command a well-organized out-patient department, can find place for a due proportion of discharged patients in convalescent homes and can plan the care of patients in the light of their circumstances and home conditions through the aid of a social service department. The deficiencies in out-patient, convalescent and social service, and of hospital beds for chronic illness seriously limit the effectiveness of the hospitals of New Haven, and reduce the value of the large financial investment which the community has made in them, since, without these essential adjuncts of modern hospital service, the care and expense that is lavished upon patients is too often without any practically valuable results.

It is true that these additional services cost money, but if one has invested seven and a half million dollars in capital, and is spending a million and a quarter dollars for annual maintenance, it will pay to add a little more to both

capital and maintenance to make the main investment much more productive.

The hospitals appear to have shown no interest in the analysis and use of their accumulating data on the incidence of disease, and on the results of hospital and clinic care, such as would be of value to the medical sciences and to public health; nor has New Haven apparently required, through its Community Chest or otherwise, such uniform accounting of work and finances as would enable institutional services to be evaluated and charitable grants be apportioned in terms of charitable service rendered.

On the financial side, New Haven has not supported its hospitals adequately. All three are in debt, one of them to a degree which threatens its existence. It should be added that the physical plants have also not been sufficiently maintained. Every hospital represents a piecemeal development, part modern, part antiquated and incapable of rendering service at present day standards. The Survey cannot answer, it can only raise, the question as to what extent the responsibility for a halting and insufficient financial support rests on the unreadiness of the giving public; or the lack of imagination and leadership on the part of the hospital boards in developing a sense of responsibility and a habit of giving among the public.

The financial situation at Grace Hospital practically faces the community with the alternative of putting up some three-quarters of a million dollars to cover the debt and give the institution a fresh start, or of winding up the hospital and realizing on its assets as fully as possible. It is inconceivable, however, that either the public or the medical profession could do without the 247 beds which this hospital now provides. They would have to be furnished elsewhere, either at a new institution, or as an addi-

tion to the New Haven Hospital. Administrative economy and efficiency would tend strongly in favor of the expansion of New Haven Hospital, rather than the establishment of an independent institution, but administrative efficiency and economy are not the only considerations. Service to patients by qualified practitioners of their choice is a consideration also. A change which would greatly restrict the opportunities now afforded a large number of physicians to whom Grace Hospital has been open would lead to justifiable complaint on the part of both doctors and public, and would result in the development of additional and almost certainly inadequate proprietary hospitals, or of another hospital, probably inefficient and struggling, incorporated for public service.

The public needs hospital beds for its service, but the public must be served in these beds through physicians. A sound program is: Hospital beds for all the people who need them and for all the doctors who are qualified to use them. The medical profession must support, the governing boards and the administrative authorities of the hospitals should appreciate and be prepared to enforce, such a policy.

President Orville A. Petty of the Board of Directors of Grace Hospital in his annual report for 1927 says:

"It is our judgment, based in part on these facts and principles and on the past three years of experience in reorganization and efforts to finance the institution, that, on account of our debt inheritance (bonds and other borrowings), the operating income supplemented by Community Chest allotment, State aid and occasional gifts, can barely be expected to meet expenses exclusive of interest on past borrowings. That is to say, we probably can, with rigid economy balance our annual budget, if other provision

is made to care for our present interest obligations and if the percentage of occupancy in our private pavilion equals the average level of the past three years. We cannot balance our budget, without annual contributions to the amount of our interest obligations, or unless and until a capital fund is secured equal or nearly equal to our bonded indebtedness. It should be kept in mind also that such a campaign effort or efforts would only leave us **status quo** with no provision for rehabilitation, replacement or expansion; and further we should not fail to appreciate a fact sometimes overlooked; namely, that although Grace Hospital is a community hospital, the community at large has never been given a clear-cut challenge to rally to the financial support of the institution.

"Last summer the directors favored a plan for merging Grace Hospital and the New Haven Hospital and a committee of our directors held satisfactory conferences with leaders of our sister institution. In October, as a result of these convictions and promising conferences, the Society voted (only one dissenting) a proposal of merger recommended by our directors. Although this merger is still a possibility, it has not made any progress which relieves our financial situation. On the contrary, its indefinite postponement last December has created for us an acute financial emergency."

It is understood that the "postponement" is now not regarded as "indefinite" and that the subject of a merger is open for consideration in the boards of both institutions. In the first of the following recommendations the three conditions under which a merger is believed advisable are briefly stated.

The situation calls for a statesmanlike and not merely an institutional point of view. The hospitals should be

regarded as a whole and the question asked, "What will be best for the community of New Haven ten years hence?" It is not unnatural that those immediately concerned with Grace or New Haven Hospital should think especially of their "own" institutions. They are, however, trustees in behalf of the community and should take the broad view of their public obligation.

Recommendation 96. The hospital system of New Haven should be placed on a sound financial basis, which can be done most economically and effectively by a merger of Grace and New Haven Hospitals, and this merger is believed desirable from the standpoint of the general public interest, provided;

(a) That the bed capacity of the New Haven Hospital be increased by a net addition of 175 beds, of which the larger part (at least 100) would be private or semi-private accommodations.

(b) That the private and semi-private beds be open to all physicians whose practice is found to comply with modern professional standards.

(c) That representatives of Grace Hospital interests be placed on the New Haven Hospital board.

Recommendation 97. The hospitals of New Haven should be made more than medical repair shops by adding facilities for convalescent care, out-patient work and social service. Specifically,

(a) A convalescent home of at least 50 beds is needed at once, on a site providing for future expansion.

(b) A social service department should be established at the New Haven Hospital.

Recommendation 98. The total number of hospital beds for acute cases need not be increased at present, but

greatly needed provision should be made for the care of chronic patients by including in the development of the New Haven Hospital at least 30 and preferably 40 beds for such cases and by improving the facilities at Springside and in the Homes for the Aged for caring for elderly persons who are sick.

Recommendation 99. The existing beds at New Haven and Grace Hospitals should be utilized to a larger per cent of their capacity, anticipating, however, that demand for hospital service will increase more rapidly than population, requiring probably 200 additional beds within ten years.

Recommendation 100. Closer public supervision of proprietary hospitals by the State Department of Health is recommended.

Recommendation 101. Uniform accounting and periodical reports from the hospitals should be developed by the Community Chest so that Chest grants can be related to the amount of charitable in-patient and out-patient service actually rendered.

Recommendation 102. The hospitals should endeavor to secure payment from the public authorities of suburbs for indigent cases from their communities who are treated in New Haven.

Recommendation 103. The City Physician system should be improved by providing for continued medical treatment at home, of chronically ill indigent persons who cannot be hospitalized and for the systematic use of visiting nurse service in conjunction with the work of the city physicians.

Recommendation 104. Permanent arrangements for the care of smallpox cases should be made in the infectious

disease pavilion at New Haven Hospital; retaining the plant at Springside for emergency use in epidemics.

Recommendation 105. For the aid of general practitioners and of persons of moderate means, a diagnostic clinic should be established under the auspices of the New Haven Hospital and Dispensary, where patients who have obscure ailments and who are referred by physicians may secure diagnosis at cost and the referring physician may obtain a full report of findings.

Recommendation 106. The hospitals should work out methods of keeping and presenting hospital statistics which will be of greater value to medical science and to public health than those now in use.

Chapter XXVIII.

DENTAL SERVICE.

With the cooperation of Ira V. Hiscock
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Yale School of Medicine.

1. **Health Department Services.** The dental service of New Haven, outside of that provided by private dentists in their offices, is furnished by the school dentists and dental hygienists, and the special clinics of the New Haven Dispensary and two hospitals (Grace and New Haven). It has been noted in the chapter on school health supervision that 3 dentists and 5 dental hygienists are employed by the health department for work in the public and parochial schools. This service, of course, reaches only children of the elementary and grammar grades.

The dental program of the health department provides primarily for prophylactic service for children in the first five grades, reparative work (with the consent of parents), and cleaning, in the first three grades, and the extraction of abscessed and temporary teeth. Pupils who need to have permanent teeth extracted and referred to private dentists or to the New Haven Dispensary. Instruction in the care of teeth is given to each child treated, and special talks are given in different school rooms by the dental hygienists. During the summer the school dentists serve all children of the summer schools as the need is indicated, regardless of age, and also care for special groups of children such as those of the summer camp at William Wirt Winchester Hospital, and those of the nutrition and other special school classes.

2. **Dispensary and Hospitals.** The New Haven Dispensary maintains a dental clinic with E. R. Bryant, D.D.S., as chief of service, A. B. Rosoff, D.D.S., as chief of clinic, and 8 clinical assistants. For each of the 5 years, 1921-22 to 1925-26, the census of the clinic was recorded as follows: 1551, 992, 1529, 1472. These cases were largely extractions performed for school children (60%) and adults (40%).

In the New Haven Hospital during the past year an exceedingly valuable dental service has been developed by F. R. Swift, D.D.S., chiefly in cooperation with the Department of Pediatrics. This service was made possible in February, 1927, through funds provided for the Pediatrics Clinic of the Dispensary of which Ethel Dunham, M.D., was in charge. It was primarily instituted for the benefit of needy cardiac, tuberculosis, and nutritional cases. The clinic aims to help the pre-school child by preserving the permanent six-year molar, the keystone of the remaining teeth to follow. This clinic has now broadened its scope to include children up to the age of twelve. The service is available every Wednesday, from 9 to 12 in the forenoon. A report shows that from February, 1927, to March, 1928, 304 patient visits were made, with 505 treatments given, including examinations, fillings, and incidental treatments.

Arrangements have recently been completed for a dental clinic for the patients at the William Wirt Winchester Hospital, with William D. Nesbit, Jr., in charge of this service.

The dental equipment which was formerly used in the Grace Hospital dispensary has been transferred to the operating room floor in the private pavilion of Grace Hospital, where dental prophylactic service among the patients

of the private pavilion has been developed. During 1926 the dental hygienist gave 793 prophylactic treatments and assisted in 41 extractions.

The Children's Community Center has an excellent dental clinic, with service on a volunteer basis provided by M. J. Loeb, D.D.S., and a group of local dentists.

3. **Summary and Recommendations.** From the above outline of activities, it appears that free dental examinations and extractions are provided for by the board of health for school children in the lower grades and by the New Haven Dispensary. Some provision is also made for this service at the City Mission. There are several private dentists who likewise give a limited amount of their time to the cases of certain welfare agencies including the Organized Charities Association and the Children's Community Center. Prophylactic work and a limited amount of repair work is done by the Board of Health for children of the lower grades. Only through cooperation with private dentists is it possible to arrange for artificial teeth or bridge work on a cost basis, and there is no provision for those who are unable to pay the cost of such services.

In the clinics of the Visiting Nurse Association, especially prenatal, and among tuberculosis patients and their families, as well as among the families of the social agencies, there is reported a definite need for provision of additional dental clinic services for adults. This is a problem which deserves careful consideration. The school dental program seems to be developing satisfactorily, but it is believed very essential that the needs for future extension of this service should be carefully considered in relation to the community dental program as a whole.

Recommendation 107: That the New Haven Dental Society appoint a public health or public relations committee to consider with the welfare agencies concerned the problems of dental service for selected types of adult needy cases, and to cooperate with the board of health and representatives of other organizations in the further development of the city dental service.

Recommendation 108: That consideration be given to the possibility of extending existing clinic services to meet the needs of selected cases of adults for repair work and artificial teeth when the individuals cannot afford to consult a private dentist.

Chapter XXIX.

VITAL STATISTICS.

With the cooperation of H. H. Walker.

1. **Existing Official Analysis of Vital Statistics in New Haven.** The fundamental defect in the organization of vital statistics in New Haven,—the collection of such statistics by a separate city office unconnected with the Health Department,—has been discussed in a preceding chapter. The actual collection and recording of the fundamental data is well cared for by the Registrar of Vital Statistics; but he makes no analysis of the material collected. All that is done in the tabulation and interpretation of statistical data must be accomplished as a side issue by the Director of the Division of Communicable Diseases, Dr. Lewis, and his staff. He deserves much credit for what is accomplished under such circumstances but it is quite impossible for a really adequate analysis to be made.

As a result of the work thus performed in the Health Department plus the collection of fundamental data by the Registrar, New Haven meets the very elementary requirements of the Appraisal Form (with the exception of tabulation of deaths by color and nativity) and scores 58 out of 60 points on this item.

It falls far short, however, of the real needs of an enlightened health department. The Director of the Division of Tuberculosis has had to devote a great deal of valuable time to statistical work which should have been performed for him, and, as pointed out in earlier chapters, essential data in regard to such problems as those of cancer and heart disease are entirely lacking.

FIFTY YEARS OF MORTALITY RATES FROM CERTAIN PRINCIPAL CAUSES IN NEW HAVEN.

DEATHS PER 100,000.

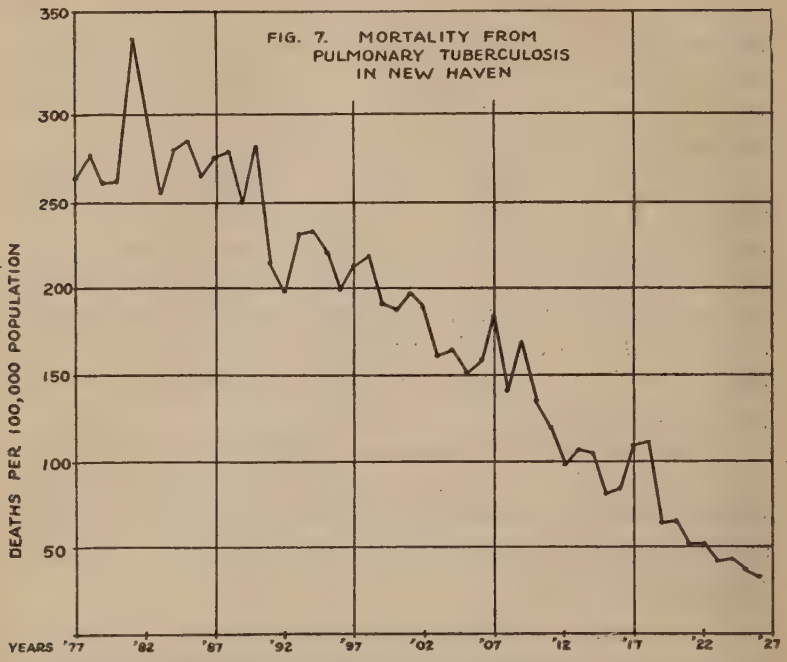
Year	All causes (Per 1,000 pop'n.)	Typhoid fever	Diphtheria	Tuberculosis pulmonary	Scarlet fever	Pneumonia all forms	Measles	Whooping cough	Diarrhea under 2 years	Nephritis	Diabetes	Heart Disease	Cancer	External causes
1877	20.0	47	184	264	121	118	3	22	155	27	10	86	57	64
1878	17.8	33	153	277	53	120	3	7	91	45	2	87	43	71
1879	16.2	39	78	261	5	116	11	21	73	36	3	79	44	81
1880	17.8	51	116	262	5	98	35	33	98	49	3	82	59	62
1881	19.4	65	91	344	14	162	0	5	106	54	0	108	66	63
1882	20.2	60	90	304	16	148	15	25	153	54	4	130	44	90
1883	20.1	64	55	255	48	130	3	50	166	48	9	128	58	73
1884	19.5	60	68	280	60	132	0	8	183	57	8	131	61	61
1885	19.4	44	80	285	14	145	68	29	112	62	7	122	42	73
1886	18.8	43	88	264	8	163	0	17	155	51	4	130	65	76
1887	19.0	40	43	276	17	154	12	16	148	50	3	111	63	63
1888	20.5	54	80	279	15	183	24	33	170	54	4	150	51	66
1889	18.7	31	123	248	7	153	0	16	114	60	2	105	49	72
1890	21.4	36	130	282	7	272	0	23	161	53	9	131	48	79
1891	18.9	24	68	216	32	250	11	1	108	74	8	152	42	78
1892	20.5	37	98	198	44	183	15	18	154	91	11	131	61	84
1893	22.7	36	122	232	66	241	23	29	129	108	7	148	53	86
1894	18.6	38	72	233	6	141	8	25	175	76	10	126	59	99
1895	19.9	41	28	221	0	188	2	36	171	87	8	147	63	79
1896	20.7	36	100	199	12	214	29	4	138	92	10	139	62	80
1897	17.6	25	89	214	19	140	9	4	112	88	10	125	62	83
1898	17.9	43	35	219	2	177	19	51	123	106	17	161	69	57
1899	16.2	33	21	191	0	143	0	5	87	105	7	180	70	59
1900	18.1	25	17	187	6	206	7	19	121	99	17	170	66	67
1901	17.8	95	23	198	4	172	11	24	107	104	17	159	88	72
1902	16.5	34	9	189	7	142	5	30	137	89	8	155	77	72
1903	16.7	36	16	161	13	200	29	20	104	85	19	153	78	91
1904	17.0	28	13	165	5	180	15	12	94	118	14	160	68	99
1905	18.4	40	12	151	6	198	2	7	113	101	18	192	91	73
1906	18.8	51	38	158	1	246	26	29	111	109	19	179	79	91
1907	18.0	28	28	184	2	240	6	6	73	104	13	239	86	86
1908	16.4	33	25	140	2	185	5	12	84	123	17	183	100	76
1909	17.0	20	11	169	16	211	19	22	81	139	26	170	91	64
1910	16.5	18	22	136	8	237	4	10	81	129	16	204	91	80
1911	16.6	23	17	119	9	255	1	12	62	122	20	204	82	77
1912	16.4	24	11	98	5	253	14	11	65	126	17	185	96	71
1913	15.7	11	15	107	8	207	2	7	49	124	26	217	89	96
1914	15.9	14	18	105	4	212	18	4	58	129	24	183	105	83
1915	15.5	18	23	81	2	220	8	7	56	136	18	202	93	86
1916	16.7	8	14	84	3	246	4	10	61	123	23	200	108	110
1917	16.7	9	15	109	0	252	17	6	47	115	26	242	108	96
1918	21.2	5	14	111	2	310	6	21	42	105	20	211	97	108
1919	12.9	6	9	64	3	144	5	2	40	86	17	171	97	75
1920	14.4	6	12	65	4	194	16	13	43	87	24	185	115	83
1921	11.6	5	14	52	5	119	1	9	17	81	26	166	111	75
1922	13.3	6	8	52	2	184	19	8	24	78	24	182	126	84
1923	12.6	6	9	42	3	170	3	5	17	70	22	213	105	74
1924	12.2	7	3	43	2	147	1	4	25	67	19	184	131	77
1925	12.1	2	4	37	3	129	3	8	17	62	23	206	119	69
1926	12.2	2	3	33	2	156	2	7	10	68	27	210	106	60

The list of causes of death tabulated in the Annual Reports of the Department should be substantially expanded and the classification of causes of death and the classification by age should be made to conform with the International List and with Census procedure, respectively.

It would be highly desirable to establish sanitary districts, corresponding to wards or groups of wards with reasonably homogeneous populations and to analyze the statistics year by year so as to bring out the relationships between district and age at death, district and sex, district and nativity and district and cause. Analyses by cause of death and nativity for the city as a whole should also prove enlightening.

If the work of registration of vital statistics were transferred to the Health Department, all this could probably be done with no additional expense to the city. If not, special statistical assistance should be provided within the Department itself.

2. **Summary of a Half Century of Progress.** From the figures now available in the Annual Reports of the Board of Health it has been possible to prepare an analysis of the progress of mortality from certain principal causes for a period of fifty years; and the results, as presented in the table below, are of considerable interest and significance in spite of obvious fallacies due to improvements in diagnosis and changes in statistical procedure.



The figures cited furnish a clear picture of what has happened in the field of mortality statistics during the past half century and a picture which is most encouraging from the standpoint of the sanitarian.

Such diseases as typhoid fever, diphtheria, scarlet fever and infant diarrhea, which were among the leading causes of death have practically disappeared as significant factors in the death rate while pulmonary tuberculosis, once the most deadly of all diseases, has fallen to a minor place. Furthermore, the dates at which the declines of these diseases began are highly significant.

From 1877 to 1897 there was no important change in mortality from any of the chief causes of death. With the

FIG. 8. DEATH RATES FROM DIPHTHERIA IN NEW HAVEN

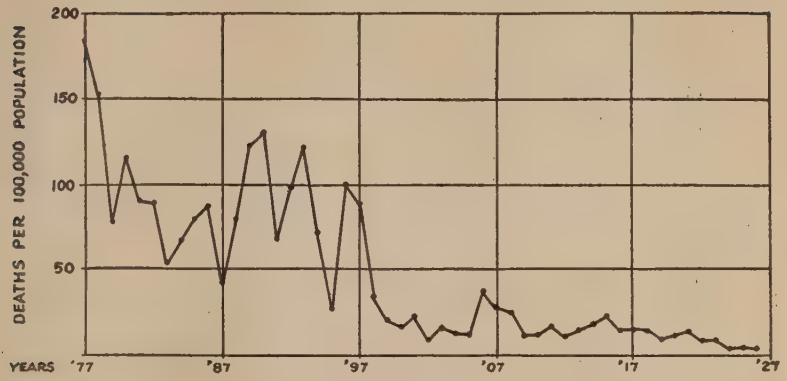


FIG. 9 MORTALITY FROM TYPHOID FEVER IN NEW HAVEN

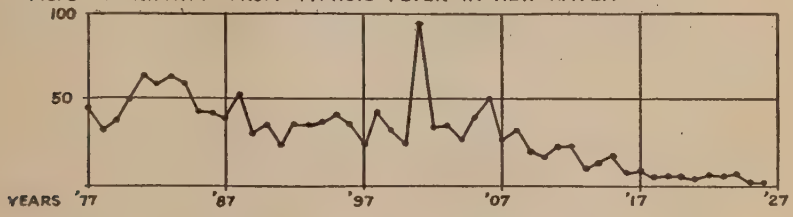


FIG. 10 DEATH RATES FROM DIARRHEA AND ENTERITIS UNDER TWO YEARS IN NEW HAVEN

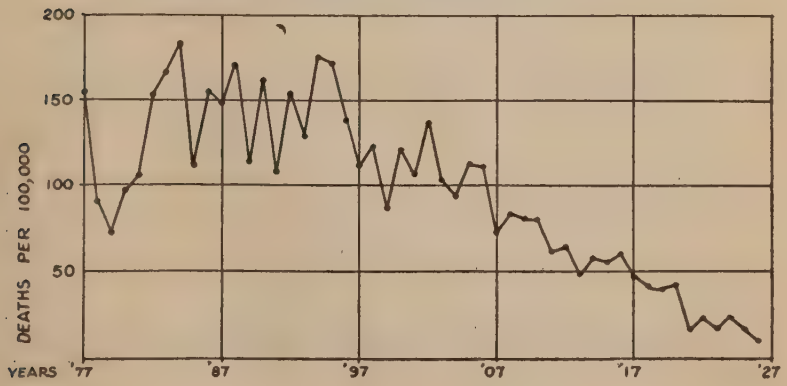


FIG. 11 MORTALITY FROM SCARLET FEVER IN NEW HAVEN.

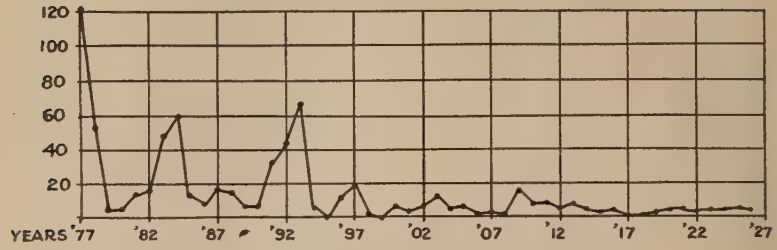
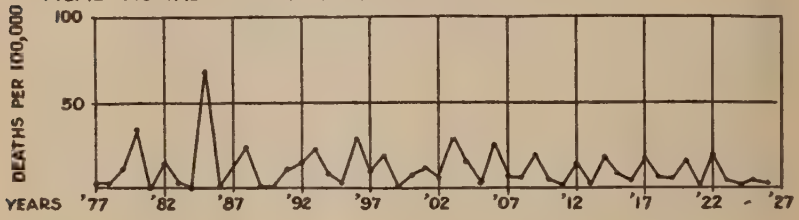
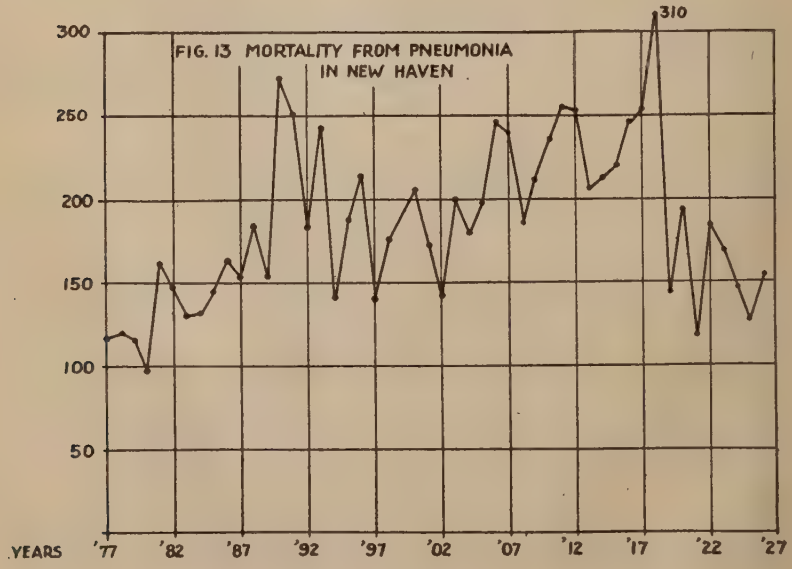


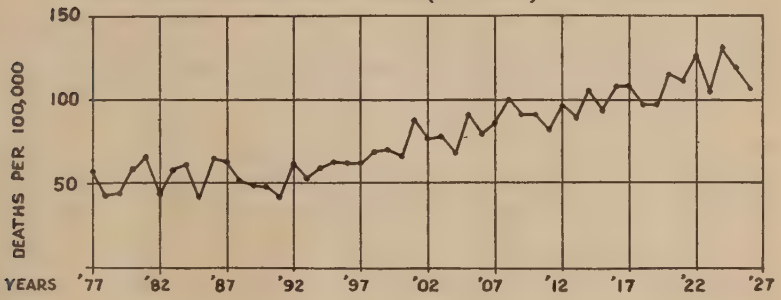
FIG. 12 MORTALITY FROM MEASLES IN NEW HAVEN



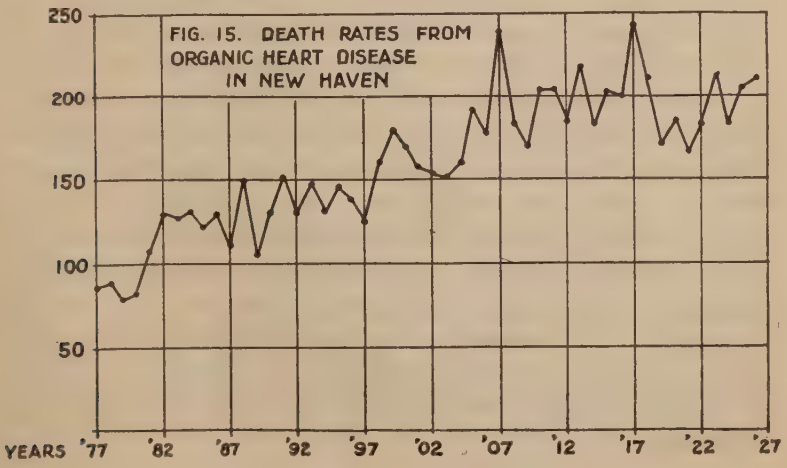


development of bacteriology and the introduction of modern methods of isolation, disinfection and serum-therapy scarlet fever began to decline in 1894 and diphtheria in 1898. With the development of clinics, sanatoria and nurs-

FIG. 14 DEATH RATES FROM CANCER (ALL FORMS) IN NEW HAVEN

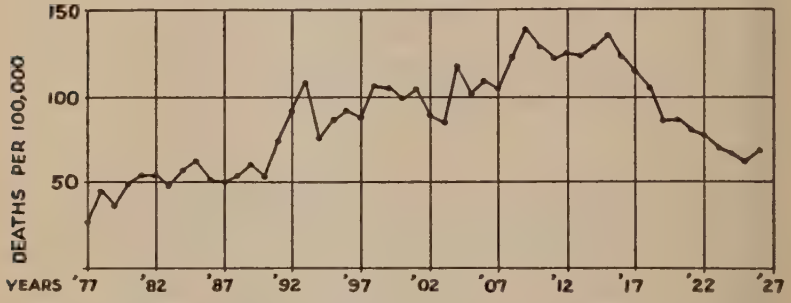


ing, tuberculosis yielded to pressure in 1903 and with clinics, nursing and improvements in milk supply infant diarrhea dropped after 1907. Typhoid fever remained high, as a result largely of polluted water supplies, until



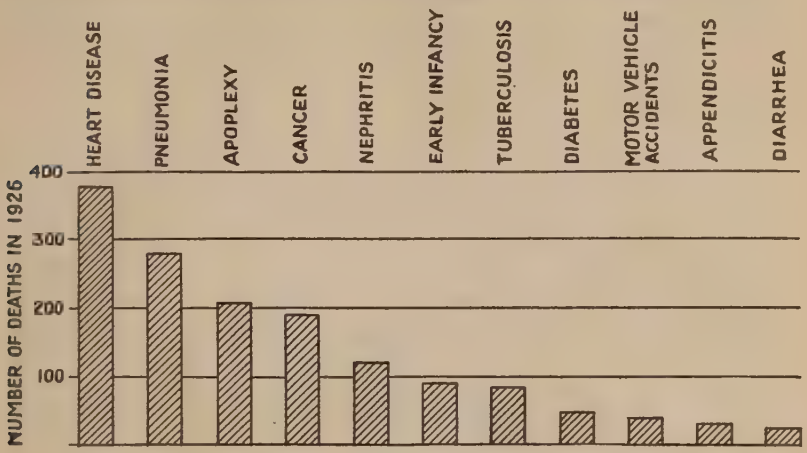
1910. In each case the marked improvements have come in precisely those diseases which have been subjected to specific control measures and at precisely the time when those control measures were put in force. There are sceptics who insist that we should not say "death rates have been reduced" but "death rates have fallen." In the long view it would seem that New Haven's death rate has

FIG. 16 DEATH RATES FROM NEPHRITIS IN NEW HAVEN



been very definitely "reduced". It was not falling but rising during the first two decades of the period studied. It fell only when modern sanitary science was applied. In the case of such causes of death as pneumonia, cancer and organic heart disease, for which effective control machinery has not been devised, the death rate has risen, at least until very recent years. The curve for pneumonia is chiefly influenced by the influenza epidemics of 1891-92 and 1917-18. The sharp fall in nephritis since 1918, after a steady earlier rise is due, as pointed out in Chapter XXV, to changes in diagnosis. Among the minor causes of death, measles and whooping cough have fallen and diabetes has increased. The mortality from external causes rose up to 1916 and has since fallen appreciably (in spite of rising rates from automobile accidents) as a result of the safety movement.

FIG. 17 RELATIVE IMPORTANCE OF THE CHIEF CAUSES OF DEATH IN NEW HAVEN



The net result of sanitary achievement is indicated in the table below.

AVERAGE DEATH RATE FROM ALL CAUSES IN NEW HAVEN BY DECADES.

Period.	*1876-1886*	*1887-1896*	*1897-1906*	*1907-1916*	*1917-1926*
Deaths per 1,000....	18.9	20.2	17.5	16.5	13.9[1]

Before the development of the modern public health program the death rate was increasing. Since 1887-1896 it has fallen by 32 per cent which is equivalent to the saving of 1,100 lives a year,—the lifting of one third of the total burden of disease and death which rested upon this community thirty years ago.

3. **Comparative Attainments of New Haven and Other Communities.** Lest we should become unduly puffed up as to the results attained and should feel that nothing more

[1] This figure would be considerably lower if it did not include the influenza year 1918.

remains to be done, it is desirable to compare New Haven's mortality rate with that of other cities. Such a comparison will make it clear that what has happened here is merely typical and that our city has not yet accomplished substantially more than other communities.

For this purpose two norms are suggested for comparison,—first the entire group of Registration Cities (all cities in the United States which have reliable statistical records); and second, the city of Syracuse, N. Y. The reason for selecting Syracuse is that it is a city of comparable size and social characteristics to New Haven and that it is now the site of one of the three Milbank Fund Demonstrations, designed specifically to show what can be accomplished in the way of building up an ideal health organization for a city of 200,000 population. It is our belief that New Haven, without any grants from outside foundations, can equal or excel the achievements of Syracuse in the future and we would invite a friendly rivalry between the two communities in this regard.

For a period of comparison we have taken the years 1922-24,—before the Syracuse demonstration was under way and before New Haven had really started on the road of advance marked out by Dr. Rice. The diphtheria campaign, the improvement of the milk supply and the new machinery for dealing with tuberculosis had not produced their effects, and it is just for this reason that the period is useful as a standard of comparison. The rates for Syracuse and for New Haven in 1922-1924 represent two good but not exceptional American cities. The changes since, and those that will follow in the future, represent real efforts to do something better than the ordinary,—stimulated by outside funds in Syracuse, entirely local in origin in New Haven.

The rates in the table below are all taken from the Census volumes for comparability and do not for New Haven exactly correspond with those cited elsewhere in this survey,—on account of minor differences in registration procedures.

MORTALITY FROM PRINCIPAL CAUSES IN NEW HAVEN, IN SYRACUSE, AND IN THE WHITE POPULATION OF ALL REGISTRATION CITIES. AVERAGE 1922-24.

	Deaths per 100,000.			*Difference between rate of New Haven.*	
	New Haven.	*Syracuse*	*Reg. Cities.*	*and rate of Syracuse.*	*and rate of Reg. Cities.*
All causes	1,272	1,254	1,219	+1%	+4%
Acute infections[1]	35	44	37	—20%	—5%
Pulmonary tuberculosis	48	36	69	+33%	—30%
Other forms of tuberculosis	18	13	12	+38%	+50%
Pneumonia, all forms	144	113	109	+27%	+32%
Diarrhea under 2 yrs.	29	31	31	—6%	—6%
Heart disease	189	229	189	—17%	0
Cerebral hemorrhage	108	99	86	+9%	—26%
Nephritis	84	94	94	—11%	—11%
Diabetes	25	24	21	+4%	+19%
Cancer	125	110	108	+14%	+16%
Diseases of early infancy	86	94	82	—9%	+5%

It appears from the table above that New Haven stood in 1922-24 very much above both Syracuse and the Registration Cities as a group in its mortality from non-pulmonary tuberculosis, pneumonia and cancer. Both New Haven and Syracuse have high rates from cerebral hemorrhage and diabetes while Syracuse (but not New Haven) has a high mortality from acute infections and from heart disease. In pulmonary tuberculosis New Haven stands

[1] Includes typhoid fever, smallpox, measles, scarlet fever, whooping cough, diphtheria and meningitis.

midway between Syracuse and the group of Registration Cities as a whole; but this figure is meaningless on account of the varying proportion of deaths occurring in outside sanatoria.

It will be of great interest in the future to note the relative progress made by the two cities of New Haven and Syracuse. If the health program of New Haven, as it is taking shape today, is carried forward notable results can be achieved.

4. **The Problems of the Future.** Finally it seems desirable to emphasize what has been said in other chapters as to the major health problems of New Haven by merely citing the number of deaths due to the eleven causes, each of which individually caused more than 25 deaths in 1926. The list is as follows (based on the primary reports of all deaths occurring in the city, irrespective of residence).

NUMBER OF DEATHS DUE TO ELEVEN PRINCIPAL CAUSES. NEW HAVEN, 1926.

Cause.	*Number of deaths.*
Heart disease	382
Pneumonia	285
Apoplexy	209
Cancer	193
Nephritis and Bright's disease	123
Diseases of early infancy	94
Tuberculosis	88
Diabetes	50
Motor vehicle accidents	44
Appendicitis	34
Diarrheal diseases	26

Together these eleven causes account for 1,528 deaths out of a total of 2,211 or 69 per cent.

Further reduction in tuberculosis and diarrheal diseases will inevitably follow the development of programs already well under way.

The other major problems of the future are clearly five in number, in the following relative order of importance:

A. The control of diseases of the cardio-vascular type (including heart disease, apoplexy and nephritis) by better medical school inspection, control of venereal disease, education in personal hygiene and development of cardiac clinic service.

B. The control of pneumonia, for which intensive research in fundamentals is an essential preliminary.

C. The control of cancer by the establishment of a cancer clinic and the promotion of early diagnosis and prompt surgical treatment.

D. The control of diseases of early infancy by improved prenatal care.

E. The control of motor vehicle accidents by a more far-reaching safety program.

Chapter XXX.

SUMMARY OF GENERAL CONCLUSIONS AND MAJOR RECOMMENDATIONS.

1. **General Sanitary Conditions of the City.** As would be expected in a prosperous and well-governed city, general conditions of environmental sanitation are excellent in New Haven. The survey of the tenement house situation, conducted for us by the sanitary inspectors of the City Department of Health, has revealed really surprisingly satisfactory conditions, with almost complete freedom from overcrowding and generally good construction and upkeep. In certain minor respects, however, the Building Code might profitably be strengthened (see Chapter II).

The public water supply is of excellent sanitary quality and, with the extensions now planned, will be adequate in quantity. It would be economical to extend the metering of services and certain minor precautions in regard to the protection of the public supply and of existing private well supplies are suggested (see Chapter III).

The most urgent sanitary need of the city is the development of a system of sewage treatment which shall protect the harbor waters from pollution. The present situation is esthetically offensive, detrimental to the property interests of the city and dangerous to health. The Fuller plan for sewage disposal is a sound and conservative one and should be carried out with the least possible delay (see Chapter IV).

The next most important sanitary problem which New Haven must face is the introduction of a general system of collection of ashes and rubbish. The present plan which

leaves it to the householders to make contracts with unlicensed private collectors is highly unsatisfactory and costs in the aggregate three-fourths as much as a complete and adequate system under public auspices. The present method of collecting and disposing of garbage is reasonably economical and satisfactory although sanitary conditions at the hog farms, both public and private, should be improved (see Chapter V).

Most satisfactory progress has been made in the elimination of mosquito-breeding marshlands. Endemic malaria has been almost abolished in New Haven and the completion of the work now planned by the Chamber of Commerce will do away with all the important salt-marsh breeding areas. It is essential, however, if the success of this program is to be fully realized, that provision should be made for systematic supervision by the city to eliminate small accumulations of standing water in which fresh water mosquitoes are propagating (see Chapter VI).

2. **The Health Department and its Work.** The Health Department of the city is unusually fortunate in the personality of its administrative head. It is well organized and well staffed and ranks among the best health departments of the country (see Chapter VII). Its budget allotment, while it has been substantially increased in recent years, still remains low as compared with accepted standards and should be progressively increased for the next few years to bring it to a point of ideal efficiency (see Chapters I and VIII). The system of inspection for the control of general sanitary conditions and of the establishments where foodstuffs are handled and sold is in general adequate and effective (see Chapters IX and X). Remarkable progress has been made during the past few years in securing the protection of the city milk supply by pasteurization.

The program for the immunization of school children against diphtheria and the smallpox vaccination campaign of last winter have been models of efficiency and effectiveness (see Chapters XI and XII) and the anti-tuberculosis program as now organized is probably unexcelled in any city of the United States (see Chapter XIII).

There are however minor reforms in organization which would, as we believe, still further increase the efficiency of the department, at little or no additional cost; and certain policies which might with advantage be given special emphasis during the next few years. These are as follows in their order of approximate relative importance:

A. The office of the Registrar of Vital Statistics should be transferred to the jurisdiction of the Department of Health. This would contribute in high degree to efficiency and economy. If it cannot be accomplished, the Department of Health should be provided with a statistician at a cost of $2,000 to conduct analyses of vital statistics which are essential to the sound conduct of the health program. If the present budget of the Registrar of Vital Statistics were available to the Health Department, no additional appropriation would be needed.

B. In the future conduct of the tuberculosis program, special emphasis should be laid on two points,—the detection of incipient tuberculosis among school children and the provision of special classes for the supervision of post-sanatorium cases (see Chapter XIII).

C. The Board of Health might profitably create a New Haven Commission on Respiratory Diseases to conduct such studies as it may find practicable in regard to the bacteriological, epidemiological, physiological and hygienic

factors contributing to the causation of pneumonia and allied diseases,—which constitute one of the three outstanding health problems of the future (see Chapters XI and XXIX).

D. Provision might well be made for transferring responsibility for the routine inspection of ordinary nuisances in vacant lots, yards and the like to the police department, freeing the sanitary inspectors of the health department for intensive work on the problems of fly and mosquito control, the protection of privy vaults and the improvement of housing conditions. If this is not done, an additional appropriation of $1,000 a year should be made for the employment of special inspectors to work on the elimination of mosquito breeding areas during the summer months (see Chapters VI and IX).

E. Special efforts should be made to increase the proportion of milk which is protected by pasteurization and more extensive laboratory tests should be made of milk both before and after pasteurization (see Chapters X and XII).

Finally, there are four definite expansions of work which are clearly indicated as desirable and for which appropriations should be made as rapidly as circumstances permit. They are as follows, in order of relative importance.

A. The system of health supervision of school children should be reorganized and substantially extended to provide for a really complete medical examination of every child at least twice during school life, for the fuller supervision of the school nurses and for the extension of health supervision to junior high schools and high schools (see Chapter XVII). This would involve the appointment of a

full time Medical Director of the Bureau of Child Hygiene at a cost of $5,000 (who could also direct the general infant welfare program of the city), and an additional supervising nurse (under the present Director of Nursing) at a salary of $2,000.

B. The Department of Health should initiate a definite and comprehensive program of venereal disease control by the appointment of a full time Director of the Bureau of Venereal Diseases to divide his time between clinic service and general direction of the city program on the plan now followed in the Bureau of Tuberculosis (see Chapter XIV). This would involve an expenditure of some $3,000 in addition to the present sum spent on venereal disease control.

C. The Department should develop a Bureau of Popular Health Instruction to organize and conduct a definite program of public health education with special reference to the two major outstanding health problems of heart disease and cancer (see Chapters XXIV, XXV, and XXVI). Such a bureau would cost aproximately $5,000 for salaries and budget.

D. A chief inspector should be appointed (presumably from the present staff) to coordinate all inspection work of the Department and relieve the Health Officer of unnecessary routine. This would involve a salary increase of $1,000.

3. **Public Health Nursing.** The Visiting Nurse Association of New Haven which, (with the City Health Department), carries the bulk of the load of public health nursing in New Haven, has for years been a leader in its field, considered throughout the country as a model and inspiration for other organizations. The foresight of its Board of Di-

rectors and the efficiency of its Superintendent have led to an almost ideal development, both as regards quantity and quality of service rendered. The demonstration of the possibilities of generalized home nursing service and the stress laid upon the education of nurses, supervisors and board members for their important tasks are specially notable features of its work (see Chapter XX). The Association, in combination with the Health Department and the New Haven Dispensary, has built up a system of supervision of the health of mothers and children which is rapidly approaching the ideal (see Chapters XV and XVI).

In the field of orthopedic nursing the Crippled Children's Aid Society is rendering a most important service (see Chapter XIX); while the Queen's Daughters perform a valuable function in the care of a group of chronic and convalescent cases.

Aside from certain problems of interrelationship which will be discussed in a succeeding section, there are four major steps which, we believe, should be taken in the development of the work of the Visiting Nurse Association. They are listed in order of relative importance.

A. If, as is hoped, the Visiting Nurse Association is to continue for the immediate future to act as the agent of the City Health Department in the execution of the home nursing phase of its tuberculosis program (and perhaps of its infant welfare program also) it seems essential that provision should be made for more definite contacts than now exist between the two organizations. It is suggested that a new committee on Health Department service be created in the Visiting Nurse Association organization and that a member of the administrative or supervisory staff of the Visiting Nurse Association be appointed as a liaison

officer between the two organizations, to be directly responsible to both the Health Department and the Visiting Nurse Association and with a salary shared by both.

B. There should be added to the staff of the Visiting Nurse Association at the earliest possible moment a specialized supervisor in the field of mental hygiene. Problems of mental maladjustment are involved in practically every day of a nurse's work and no generalized nursing service can function with full efficiency without supervision and instruction along this line.

C. With the impending expansion of prenatal and delivery service, it is felt that additional specialized supervision in the field of obstetrical nursing would be distinctly desirable. It appears that this end can be attained without appreciable cost by cooperation with the New Haven Dispensary and the Yale School of Nursing.

D. It would be desirable to make some study of the Home Economics Department of the Association with a view to possible greater emphasis on the nutrition phases of the program and more active participation of staff nurses therein.

4. **Hospitals and Dispensary Service.** New Haven's hospital situation is perhaps not on so high a plane as that attained by the two other major elements in its health program,—its health department and its public nursing service. The difficulties resulting from inadequate financing of its three hospitals and consequent accumulation of debts, and the suggested remedies have been discussed in Chapter XXVII. The New Haven Dispensary is developing into a medical agency of outstanding usefulness but is also hampered by its inadequate physical facilities.

In the field of hospital service, there are three obvious and outstanding needs for development, which may be listed in order of importance as follows.

A. There is an almost total lack of facilities for the care of chronic and convalescent cases in New Haven and this need must be met if the hospitals for acute cases are to function effectively and if the sick of the city are to be adequately provided for.

B. A psychiatric ward for the observation and temporary care of mental cases is a second vital essential of the community health program. This need will presumably be met if plans under consideration by Yale University are carried to completion.

C. There is urgent need for the development of social service in the New Haven Hospital. The excellent work of the physicians and nurses of the staff is seriously handicapped by present deficiencies in this respect.

In the development of the New Haven Dispensary there appear to be three important steps to be taken in the future.

A. The organization of a cancer clinic.

B. The extension of dental clinic service for adults.

C. The development of a diagnostic clinic.

These problems are specifically discussed in Chapters XXVII and XXVIII.

5. **General Appraisal of New Haven's Health Activities.** The effectiveness of various phases of New Haven's health program has been estimated in the foregoing chapters by the application of the standard Appraisal Form of the American Public Health Association. The results are summarized as a whole in the table below.

APPRAISAL OF NEW HAVEN'S HEALTH SERVICES.

Activity	*Maximum Score.*	*New Haven Score.*	*Deficiency.*
Vital Statistics	60	58	2
Communicable Disease Control	175	159	16
Venereal Disease Control	50	33	17
Tuberculosis Control	100	85	15
Prenatal Service	75	75	
Infant Welfare	75	75	
Preschool Health Service	50	50	
School Health Service	150	122	28
Sanitary and Food Inspection	35	30	5
Milk Control	60	34	26
Water Supply and Sewerage	80	74	6
Laboratory	70	67	3
Popular Health Instruction	20	18	2
Total	1,000	880	120

The Appraisal Form is by no means a perfect instrument and the low scores registered in several instances (notably in communicable disease control, in tuberculosis control and in milk supervision) are in part due to unduly high standards or imperfect standards of measurement. On the whole, however, the score gives an accurate picture of the situation. Fundamental work in vital statistics registration, fundamental sanitary inspection service, laboratory service, water supply and sewerage and popular health instruction (according to accepted standards) are well provided for,—although the last named activity is susceptible of great and profitable development in the future; while prenatal, infant and preschool work are of a very high quality.

On the other hand there is more to be done in communicable disease control, tuberculosis control and milk supervision, while venereal disease control, and school health service need to be materially strengthened.

6. **Problems of Coordination.** Before summarizing the more important expansions of service which appear to be indicated as desirable in New Haven it seems well to consider certain possibilities of coordinating existing resources in the furtherance of economy and efficiency.

Public health activities, here as elsewhere, have grown up in a more or less haphazard fashion, each function being undertaken by the organization or organizations which had the vision and initiative to realize the opportunity of service afforded. In such a process there must necessarily be created situations which involve duplication or lack of clear and logical responsibility. Vested interests naturally arise and one is faced with the problem whether the development of an ideal program is sufficiently important to justify disturbance of the **status quo.**

In New Haven, such complications are on the whole relatively few; but this very fact tempts one to suggest certain minor readjustments which would give us an almost perfect organization plan. There are few cities where centralization of activities in a few strong and effective organizations has already proceeded so far. We are within measurable reach of the attainment of an ideal condition in which all directive and supervisory health functions shall be centralized in the Health Department, home nursing service (aside from such functions as communicable disease control) in the Visiting Nurse Association and outpatient clinic service (other than conferences for normal mothers and babies) in the New Haven Dispensary. This is a consummation devoutly to be wished for; and we would suggest for the consideration of the organizations concerned certain further steps leading toward that end.

A. The employment or appointment of physicians for prenatal, infant and preschool conferences should not, as

it seems to us, be made as at present by the Visiting Nurse Association. The appointment and supervision of medical personnel should be exercised only by a recognized medical official and not by a nursing organization and the development of such conferences is fundamentally a responsibility of the Health Department. We would urge that the Visiting Nurse Association confer with the Health Department with a view to the assumption of this responsibility by the latter organization (see Chapters XV and XVI).

B. It is generally recognized (as pointed out in Chapters XIV and XXVII) that venereal disease clinic service can best be rendered (both for medical and psychological reasons) in a well-equipped polyclinic, rather than in a separately organized clinic devoted to such diseases alone. It would be highly desirable for the Board of Health to consider the combination of its venereal disease clinic with the polyclinic service of the New Haven Dispensary, along somewhat the lines followed in the development of the tuberculosis program, perhaps by cooperation between the two institutions in the payment of the salary of a physician who could serve both.

C. A distinct duplication exists in the home child welfare nursing services of the Health Department and the Visiting Nurse Association which involves the visiting of the same homes for essentially similar purposes by two groups of nurses. Since the child welfare work of the Health Department is a special isolated service while that of the Visiting Nurse Association is a part of its system of generalized home care, the only practical way to solve this problem (without further violation of the fundamental and essential principle of generalization) would be to delegate the performance of the present functions of the welfare nurses to the Visiting Nurse Association. In view

of the success attained by similar action in the field of tuberculosis it seems not too much to hope that such a step may be seriously considered. It should of course be understood, if this course is followed, that the Visiting Nurse Association is acting as the agent of the Board of Health and adequate machinery should be provided (as suggested in a preceding section) by which the Board of Health may exercise practical contact with the work. With such safeguards, the city while appearing to resign four nurses would really be adding fifty nurses to its staff. The ultimate assumption by the city of all public health nursing functions under a generalized plan must always be kept open for consideration. For the present, however, it would clearly be of advantage for the Board of Health to delegate its welfare nursing to the Visiting Nurse Association, with an annual grant for carrying it on, so long as the arrangement shall prove mutually satisfactory.

D. The fact that the Crippled Children's Aid Society at present serves only certain physicians in the community is distinctly unfortunate and we would urge that, on request from the New Haven Dispensary or from any qualified orthopedists, the facilities of the Society should be placed at the disposal of the physicians concerned. We would also urge the officers of the Society to consider the possibility of cooperation with the Visiting Nurse Association, looking toward a more generally effective program of community orthopedic nursing (see Chapters XIX and XX).

E. We would suggest that the Visiting Nurse Association should approach the officers responsible for the nursing work of the Queen's Daughters with a view to the reallocation of patients between the two organizations so that the Sisters might care for chronic and convalescent patients

and the Visiting Nurse Association for children and for acute cases (see Chapter XX).

F. The Visiting Nurse Association, as the largest organization in this field, might naturally also take the lead in the organization of the Council of Community Nursing (suggested in Chapter XX) which would, we believe, prove of incalculable value in promoting sound future development in this important field.

7. **Summary of Major Recommendations Affecting the Policies of the Community Chest.** The New Haven Community Chest has been generously supported and has done much to coordinate and develop social services in New Haven. There remain, however, certain definite and highly important gaps in our community health program which we would call to the attention of the Directors of the Chest and of the agencies specifically concerned.

A. The first need in this field is the need for an adequately-manned Social Service Department in the New Haven Hospital and the New Haven Dispensary (as outlined in Chapter XXVII). The whole of the costly machinery of these institutions is hampered and rendered relatively inefficient for the lack of this essential element.

B. Next in order of immediate importance, we would place the addition to the supervisory staff of the Visiting Nurse Association of a Mental Hygiene Supervisor. This is again a provision which would not only be useful in itself but which would multiply by a considerable factor all the work now accomplished throughout the organization as a whole.

In order to bring the public health nursing force of the city up to ideal standards it should be planned to add three new nurses a year to the force of either the Visiting Nurse

Association or the Department of Health for a period of five years and two nurses a year thereafter. (The proposed mental hygiene supervisor under the Visiting Nurse Association and the proposed school supervisor under the Health Department would be included in this estimate). The program would therefore call for an added annual appropriation; either from the Chest or the city or both, of $6,000 a year for the next five years. Two-thirds of this sum would represent merely an increase of the present city and Chest allotments proportionate to increasing population.

C. The facilities of the New Haven Dispensary should be expanded to provide for a Cancer Clinic, for more extensive dental care for adults, and for a Diagnostic Clinic. The cost of these expansions would be small and their results far reaching.

D. Another important gap in our program for the care of the sick is the lack of provision for occupational therapy. It is suggested that the Directors of the Chest should ask the Connecticut Occupational Therapy Society to make a special study of this problem and suggest a practical program for dealing with it.

E. The problem of providing for the hospital care of chronic illness and convalescence (as discussed in Chapter XXVII) is of greater intrinsic importance than any one of the problems already discussed. It is listed after them, however, merely because they may easily be solved in the immediate future while the problem of caring for convalescent and chronic illness requires careful study and considerable expenditures for construction. There should, however, be no delay in beginning a serious consideration on the part of the Directors of the Chest of ways and means of supplying this vitally essential type of service.

F. Finally, while outside the direct field of Chest activities, we would urge that the Directors give consideration to the plans which will no doubt be presented at Hartford next year for the expansion of state facilities for the care of mental diseases and defects and use their influence to secure a sound solution of this problem.

8. **Major Recommendations Affecting Other Voluntary Agencies.** Among voluntary organizations outside the Community Chest which are involved in the recommendations of this report, the Chamber of Commerce is the only one which requires special mention. This organization, through its Safety Council, has rendered a highly useful service in connection with street safety and industrial safety. In the latter field, and in the wider field of industrial hygiene as a whole it seems to us that the Council should have a much wider usefulness than in the past. It is a regrettable fact that the industries of New Haven have been notably slow in applying the resources of modern medical science as an aid to production and we would urge the creation by the Chamber of a special Committee on Industrial Health to study and stimulate developments in this field. Such developments should contribute equally to public health and to industrial efficiency (see Chapter XXII).

While the present health machinery of New Haven is in other respects fully adequate in general outline we would suggest the organization of one new body, a Committee on Social Hygiene for the exercise of the general functions outlined in the Recommendations of Chapter XIV.

9. **Summary of Major Recommendations Affecting Policies of the City Government.** Our more important suggestions regarding the internal development of the City

Health Department have been summarized in a preceding paragraph and need not be repeated here. There are, however, certain major recommendations which require action by the City Government as a whole or by one or more branches of the Government other than the Board of Health which may profitably be listed here,—in the hope that the Directors of the Community Chest, (to whom the present report is primarily directed) may perhaps see fit to call them to the attention of the municipal authorities.

A. The first primary essential for the health and sanitation of the city is the completion of the Fuller program for the cleansing of the harbor waters by the treatment of the sewage of the city, with the construction of relief sewers for the down town section and the sewerage of unsewered sections of the east shore wards.

B. A second major sanitary problem is the introduction of a general public system of collection of ashes and rubbish and an improvement in the sanitary condition of the existing hog farms. We would suggest that representatives of the Department of Public Works, the Department of Health, the Police Department and the Department of Charities,—perhaps under the chairmanship of the City Engineer,—might profitably be requested to study the various problems outlined in Chapter V of this survey and present a program for their solution.

C. It seems most important from the standpoint of efficiency and economy that steps should be taken to transfer the work of the Registrar of Vital Statistics to the jurisdiction of the Department of Health.

D. Our studies indicate that the appropriations of the Department of Health are still considerably below the allotment necessary for reasonably adequate protection of

the public health. It appears that, while the Community Chest is doing more for health service than is done by voluntary agencies in most cities, the city is doing less; and must substantially increase its health budget if New Haven is to secure an adequate program.

The following specific additions to the budget of the Department (in addition to normal routine increases) are indicated as particularly vital at the present time.

ESSENTIAL INCREASES NEEDED IN THE HEALTH DEPARTMENT BUDGET.

Object	*Annual Appropriation*
Director, Bureau of Child Hygiene	$5000.
Salary and budget for Bureau of Popular Health Instruction	5000.
Medical salaries, infant welfare conferences[1]	4000.
Director, Bureau of Venereal Diseases[2]	3000.
Additional supervisor of school nurses	2000.
Statistician[3]	2000.
Additional salary for chief of Inspection Bureau	1000.
Inspection service for mosquito control[4]	1000.
	23,000

As indicated in the footnotes to the table above, several of the items listed are contingent on other circumstances. An addition of between $13,000 and $23,000 a year (depending on these circumstances) should be made to the health department budget in the near future if the city is to fulfil its duties in the promotion of the health of its citizens.

E. Finally, it is urged that the Police Department be requested to give careful consideration to the recommendations contained in Chapter XIV of this survey with regard

[1] Only necessary in case Visiting Nurse Association relinquishes this work.
[2] In addition to present funds for venereal disease work.
[3] Unnecessary, if Registrar's office is combined with Department.
[4] Unnecessary if routine sanitary inspection functions can be assumed by police.

to the appointment of policewomen and that the attention of judicial and prosecuting officers of city and county be called to the suggestions contained in the same chapter looking toward the more effective enforcement of laws bearing upon problems of social hygiene.

10. **Possibilities of the Future.** It is obvious that New Haven has, on the whole, an excellent health program and that it has already reaped rich results from the applications of sanitary science. Comparing averages for the years 1877-1881 with averages for 1922-26 we may note that the death rate of typhoid fever has dropped from 47 to 5 per 100,000 or 89 per cent; that of diphtheria from 122 to 5 or 96 per cent; that of pulmonary tuberculosis from 282 to 41 or 85 per cent, and that of infant diarrhea from 105 to 19 or 82 per cent. The reduction in the death rate from these four causes alone amounts to the saving of 875 lives each year.

In all this New Haven has only shared in the general rate of progress of the last half century. During the past ten years it has begun to move to the front in relation to other cities. It has now a health organization which with the relatively slight expansions and coordinations indicated above can perhaps be made superior to that of any other large community in the United States. Further reductions in the present death rates from diseases of early infancy, tuberculosis and diarrheal diseases can easily accomplish a saving of 100 more lives a year and the intensive program suggested for the control of cancer and the cardio-vascular diseases can, as we believe, accomplish the saving of at least 200 more.

It is this goal which we would set before New Haven for attainment during the next decade.

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